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ABSTRACT

Using data from various published sources, this report reviews the growth of higher education in India over the last 30 years, analyzes employers' needs for higher education graduates since 1950, and suggests guidelines for involving educational planning with manpower planning. The author describes the growth of Indian higher education in the burgeoning of new institutions, in the increase of enrollments, and in the expanding of educational expenditures. Within the perspective of labor force characteristics as a whole, Indian Ministry of Labour statistics are used to show the past effects of employment trends on university graduates' success in finding jobs in their fields. The employment characteristics of a cohort comprising 1968 graduates are detailed, as well, in data drawn from the 1971 census. With primary education being universalized in India, it is argued, planning for higher education must include projecting labor market needs so that unemployment and underemployment of graduates might not dampen future economic expansion. The report thus argues for manpower planning as part of educational planning, to be balanced with the individuals' choices of career. Past Indian programs of manpower planning are described, and the present mismatch of employer needs and employee qualifications is documented. The conclusion contains suggestions for an employment-oriented educational policy and a better relationship to general economic policy. (JW)

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Manpower aspects of higher education in India

Qamar Uddin Khan

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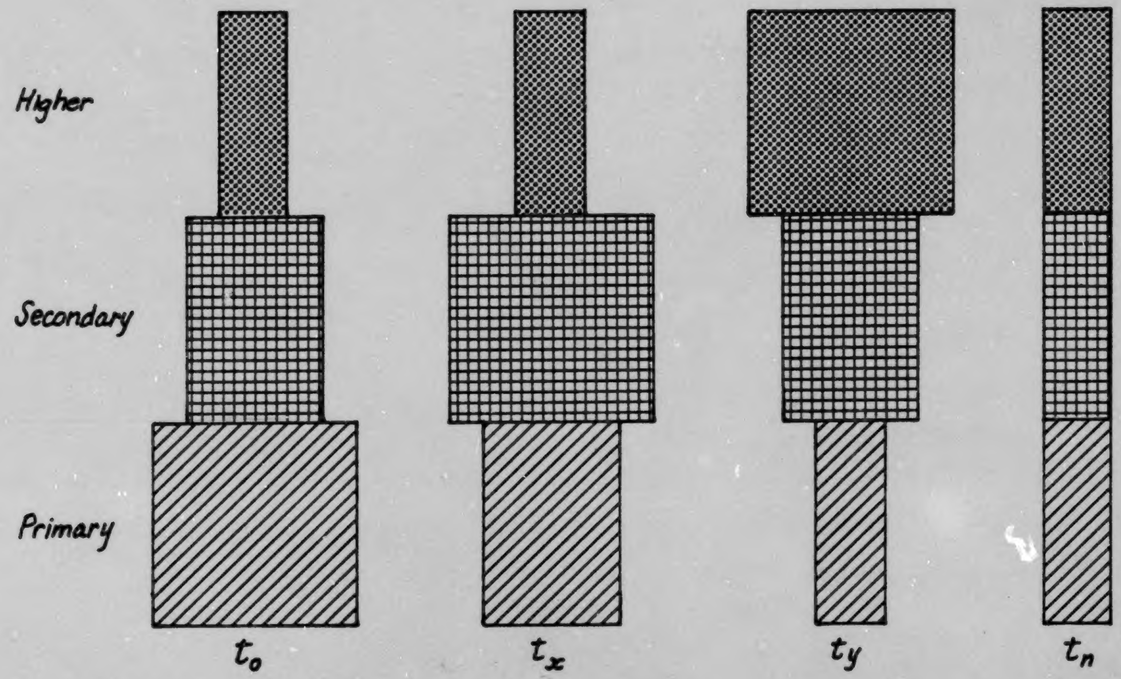
CHAPTER I

INTRODUCTION

A national corollary of the expansion of elementary and secondary education facilities a quarter of a century ago, has been an all round expansion of higher education during the last two or three decades. This process of expansion of educational facilities at different levels has been more or less similar in all the countries, developed as well developing, except for the fact that in the former it came first while in the latter a little late. Secondly the relative rates of expansion and the inter-level transition periods have differed in different countries. There might have been some reasons, economic or social or even educational which might have accelerated the growth rate of a particular stage (level) of education in a particular country but one thing is certain that the cycle of educational expansion once set in motion cannot be stopped half way through. The facilities for secondary education have to be expanded when primary education is universalised and likewise subsequently higher education has to expand to meet the pressure of expansion of secondary education. Thus in due course the initial pyramidal structure of incremental growth rates of primary, secondary and higher education has to take an inverted shape over time and at some stage the sectoral growth rates are bound to be identical. This will be clear from the following figure :



The educational systems in all the developing countries including India have or are following exactly this course. It is quite possible, however, that in some countries the expansion of higher education might have got accelerated due to the rôle it has been assumed to play in the economic development as shown by the researches conducted in many developed countries indicating a high positive rate of return on educational expenditure. In some developing countries specially those which got independence recently, this expansion of higher education got further accelerated due to two important social factors : (1) a long denial of access to higher education during the colonial regime and (2) the adoption of socialistic policy to remove inequalities of educational opportunities between sexes, regions and communities. These factors have also played their due rôle in the Indian context and both the Union and the State governments are making special efforts to see that the women and weaker sections of the community do not lag behind in the pursuit of higher education.

While the progress of higher education in developing countries has followed more or less the trodden path of their developed brethen, it is a pity that they have faced and continue to face some unpleasant problems; the most serious ones of them being those of unemployment, under-employment and mal-employment of higher educated persons. Because of these phenomena, there has developed a defensive attitude among those in charge of higher education in these countries. They are involved in self criticism which is not only overdone and misdirected but also irrelevant to a very large extent. The type of attack higher education is facing today in many developing coundries including India will be realised by going through the following statements :

(1) Higher education has grown much faster than the national income itself.

(2) Higher education has registered much faster growth than any of the sectors of the economy.

(3) Higher education has, in comparison to other levels of education also grown much faster. Actually higher education has become a sector of unbridled expansion.

(4) Higher education has been treated as a blue-eyed boy although it reaches the least number of persons.

(5) Expansion of higher education has delayed this fulfilment of the obligation of universal elementary education. In the Indian context even the high illiteracy is partly due to much emphasis on higher education.

(6) In higher education the targets have been over achieved.

(7) Higher education has expanded first because there was expansion at the first two levels of education. Thus it has no purpose or its own.

(8) The expansion in higher education is more in the nature of a drift than the result of a planned action.

(9) Graduates of higher education cost more than the graduates of other sectors of education and the differentials are quite substantial and alarming.

(10) Higher education has not brought about the desired socio-economic development.

(11) Higher education has not solved the problem of poverty.

(12) Higher education has not made the country self sufficient.

(13) Higher education has not solved the problem of inequalities and, in fact, given birth to some fresh inequalities.

(14) Higher education has perpetuated the class structure.

(15) There has taken place an unproportional concentration of higher educated manpower in cities and towns but acute paucity in rural areas

(16) Expansion of higher education has unnecessarily raised the minimum entry qualifications for a number of jobs.

(17) There is a mismatch between the educational preparations and the actual requirements of jobs.

(18) In short, higher education has created more problems than solved.(1)

How much of this criticism of higher education holds good in the Indian context will be examined in this paper. However, many things have been said which cannot be attributed even indirectly to higher education. Actually some things are there just because higher education has not expanded to the extent it should have. Much of the criticism seems to be arising out of the fact that there is no correct appreciation of the rôle and functions of higher education. It is taken to be the panacea for all the ills of society. Let it be made very clear that higher education cannot by itself solve the socio-economic problems of any society. Higher education per se does not generate employment or remove poverty or inequalities of income. It is not even an instrument for creating jobs. It merely makes the graduates employable for certain jobs by imparting skills to them. Even within the educational sector how many teachers and other categories of personnel will be employed ultimately depends on the investment decisions on which educational planners have no control.

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(1) Bikas C. Sanyal and Michael J. Kinunda, Higher Education for Self Reliance : The Tanzanian Experience. International Institute for Educational Planning, Paris, p. 12.

Besides the correct appreciations of the functions of higher education, sometimes inferences are drawn on the basis of wrong interpretation of data and facts. For example, the intersectoral comparison of growth rates within the education system on the basis of simple percentage indices (col. 8) may prove to be very misleading as the base figures of enrolment at the three levels of education are very different and not comparable. For example, the percentage indices of column 8 will show the highest growth in enrolment of higher education, but on the other hand, a comparison of the absolute enrolment data, or the absolute increase in enrolments (col. 9) at three stages or the comparison of percentage increase of population covered in the respective age group (col.12) reveal an entirely different story (Table I.1)

In terms of absolute numbers there has been an increase of 31.1 millions students in the three stages of education. If this only 0.12 millions was accounted for by the higher education. Similarly if enrolments as percentage of respective population are analysed, it is revealed that Primary education has scored 16 per cent point increase during the period but higher education has scored only an increase of 0.2 per cent points. Even in total enrolment the higher education share has improved from 0.25 per cent to 0.30 per cent. It is, therefore, very essential that the data are analysed and interpreted in the right context.

From what has been said above it should not be construed that there is no problem either in the field of higher education or with the graduates of higher education. Higher education has many problems both quantitative and qualitative. Quantitatively, higher education poses a serious problem of mismatch between the supply of graduates and the demand for them. Qualitatively the standard of higher education is not up to the mark and there is gradual decline. India has huge surplus of higher educated persons in the face of a very low standard of living and vast unexploited natural resources. The unemployment of the graduates is on the increase

Table I.1 Implications of different enrolment ratios

Sector		Age Group Population		Enrolment				Percentage Growth Index	Absolute increase	Enrolment as % of Population in the respective age group		
		t^1 (1961)	t^2 (1971)	t^1		t^2						
				Number	%	Number	%			t1	t2	Increase in t1 to t2
1		2	3	4	5	6	7	8	9	10	11	12
1.	Primary	870	1 080	40.0	92.8	68.0	1.6	172	28.0	46.0	62.0	16.0
2.	Secondary	280	330	3.0	7.0	6.0	8.1	200	3.0	11.0	18.0	7.0
3.	Higher	450	540	0.1		2.2	0.3	220	1.2	0.2	0.4	0.2
4.	Total	1 600	1 950	43.1	100.0	742.2	100.0	572	311.2	-	-	-

from one plan period to another plan period and the period for getting first a job is becoming unduly long. Higher qualified persons are forced to accept jobs meant for lower qualified persons. There is also a persistent complaint from the employers that the educational institutions are not turning out the graduates required to man the industry and agriculture. In short there is no effective matching of educational patterns and job opportunities.

What are then the manpower aspects of higher education? How education should be linked with manpower requirements or should (can) manpower requirements be the only basis for the expansion of high education? Is it not necessary that the labour market should also respond to and absorb the increasing out-turn of graduates from the institutions of higher education? Should not manpower planning form the basis of general economic planning? Why should not the human resources be taken as the most important resource and input and all the planning exercise concentrate to find out the optimum utilisation of this precious resource? For ultimately planning and specially the developmental planning is to improve the quality of life of an ordinary man. What rôle has higher education played and will further play in the achievement of this vital objective of improving the quality of life and raising the standard of living of the general masses? As elementary and secondary level education are not provided on the basis of manpower requirement criteria, it becomes an important question as to how and why higher education should be expanded on the basis of manpower consideration alone. Can the expansion of higher education based on manpower requirements approach and fulfil the objectives of raising the educational standards of the population to internationally respectable norms in general and bringing about the socially backward classes of the Indian society to comparable level so that the gap between them and the élite classes is bridged and also ensure that the available talent does not remain untapped and goes to waste ?

To appreciate the above listed issues in a better manner, it will be desirable to thrash out the manpower aspects of higher education in detail. This is also necessary to understand the rôle of educational planning and find out the linkages between it and the manpower planning on the one hand and educational planning and development planning on the other. The study of manpower aspects of high education will also facilitate the understanding of the type of rôle the employment market has to play in order that manpower planning and educational planning become meaningful exercises. In the following paragraphs, therefore, various aspects of manpower planning of higher education are discussed in detail.

Manpower aspects of higher education

The most important aspect of manpower for higher education is that the annual requirements of the country in respect to additions to the national stock of higher educated manpower should be assessed in advance with as much precision and firmness as may be found practicable. These assessed requirements should be adequately met by the annual supply of higher educated manpower from within the country itself. (In the early stages of development some critical manpower may be imported).

Arrangements should also exist to ensure that higher educated manpower cohorts do not remain unemployed or wastefully under employed. In the present planning process and machinery there is no direct link between education and employment and as such employment of even manpower planned higher education (such as engineering education, medical education, agricultural and veterinary education, etc.) graduates are not fully ensured. Under a good arrangement every graduate should be given along with his or her degree of diplôma an offer of appointment as well. This offer, in a democratic society, need not be binding, and the graduate should have the liberty to accept another offer with the consent of government or any other employment coordination authority.

Another manpower aspect of higher education is that the courses of higher education should be reviewed and revised continuously in the light of changes which are occurring in the pattern of employment of higher educated cohorts. The contents of higher education should match the requirements of various jobs being performed.

Neither educational planning nor manpower planning can be limited to the short period covered by one five year plan. These exercises to be meaningful have to be based on long term economic perspectives for it is the from essence of such exercises that decisions are taken before the commencement of one five year plan period about actions to be taken during that period, in order to adequately prepare for meeting the needs of a longer period. In short, decisions in educational fields have to be taken much in advance. Even a rough economic perspective based on the best possible practical judgement and available data will be better than no perspective of any kind. This perspective, however, has got to be kept under constant review in the light of actual happenings and better data becoming available. The recent adoption of the concept of a rolling plan is a welcome feature. Under the rolling plan, the targets are to be constantly reviewed and changed every year in the light of actual performance of the economy. The problem of time lag can thus be reduced although cannot be eliminated entirely.

Yet another manpower aspect to be taken into account is the fact that educational progress and employment opportunities are not taking place at an even rate in all the regions of the country. There are many areas which are educationally backward and they require all incentives for promoting educational effort. Therefore, the matching of education and jobs should not be attempted only at the aggregate national level, but also at the decentralised regional (state and sometimes, for some educational curricula, even at the district) levels. Whenever there is going to be an uneven growth, efforts should be made to increase the occupational mobility of the educated persons. This will bridge the regional inequalities and also lift-up the socially backward areas.

Very often manpower planning is regarded as merely a statistical computation - the making of "forecasts" or "projections" of requirements. And these forecasts or projections are supposed to be used by educational authorities as the basis for planning expansion or contraction of educational facilities. This is a very misleading and over simplified conception of both manpower planning and educational planning. Manpower planning should not merely concern itself to translating economic targets and deriving therefrom the requirements of different categories of educationally prepared and trained persons. Actually manpower planning should form the basis of economic planning. No doubt forecasts should continue to be made of what would happen to demand and supply, if the existing arrangements about employment and educational facilities were allowed to continue unchanged. But this should be only one and the preliminary step in the whole manpower and educational planning exercise. After having arrived at such forecasts it should be imperative on the part of both the manpower and education planning authorities to substitute targeted figures for the forecasts, not only in respect of supply but also in respect of demand for manpower. It requires no special effort to cut down the supply of higher educated manpower if economic perspectives drawn by the economist are not very bright. A simple directive from the Ministry of Finance and Ministry of Education will achieve this objective. For example, in India, the engineering education intake has been cut down successfully after the surplus of this category of manpower in 1967-68. This, however, defeats the very purpose of planning for improving the quality of life through education which is the best and lifelong input both for an individual and the society. The educational planning and manpower planning should, therefore, discharge the rôle of improving the educational content of the working force on an ever increasing scale. This can be achieved only when manpower planning forms the basis of economic and social planning decision process. The results will then be encouraging as they will have the binding force on the employing agencies as well as on educational institutions. The individual will then be able to see through and choose education and training which will be definite and useful.

How callous have been manpower planning and educational planning can best be understood with reference to teaching manpower for higher education itself. Teaching manpower for the University and College sector has been and continues to be produced and used without any plan of production or use. Considering that the national educational system is both the user and the producer of this category of manpower, there should have been a perfect coordination between its demand for and supply of. However, the whole educational system (higher education) has been expanding and is expanding on the assumption that the supply of and demand for its teaching manpower will automatically get adjusted. It is a pity that even today there is no realisation of the need for such a plan. It seems as if the educational system feels that it is best served by the classical theory of "laissez-faire", or they do not have any faith in planning when it comes to them. It is true that due to over supply of degree holders teachers can be picked up from it. But it should be borne in mind that this picking is not the best as the first screening of talent in India takes place at the time of admission to various professional courses after the school examinations. Further those turning to teaching do so only after they have tried for other more prestigious jobs. Thus planning for teaching manpower is not only desirable but essential. It will ensure a fair share of talent, adequate number of teachers for rural and backward areas and also subject wise matching of supply and demand.

Educational planning and manpower planning should not be confused as one and the same thing. They are two different things. One is not even part of this other. They are only intersected manpower planning is one aspect (just as financial planning and material supply planning are two other aspects) of the entire process of planned development of the national economy including the national educational system.(1) The two are interrelated but separate. Taking the manpower requirement approach as the basis for planning higher education one starts with the national stocks of higher educated manpower. The growth of this stock of manpower is planned with targets determined by effective usability (based on the sectoral growth rates of the economy).(1) From these targets of manpower stocks (making adjustments for attrition component) targets for planned higher educated manpower cohorts are deduced. From these again are deduced the targets for planned growth of higher educational cohorts. One last step binds together manpower planning and educational planning to higher educated manpower. It is the strength of this link that determines the impact of planned decisions.

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(1) R.A. Gopalaswami - Minute of Supplementation - Report of the Education Commission, 1964-66, p. 560

The current manpower situation in India poses a number of issues for the educational planners in terms of number of students and quality and types of courses of study for higher education. It calls for a thorough study of the linkages between higher education and the world of work. This requires a detailed study of the various job titles in terms of an activity analysis which is quite a sophisticated and time consuming exercise. Some idea of the match or mismatch between education and occupations can also be had through a study of education occupation matrices for different industrial sectors and activities. It is true that these matrices may be subject to a large number of imponderables, such as substitution within educational titles, rôle of non-formal education/training, technological innovations, etc. The impact of these factors can be separated if the matrices are generated over a long time period and are compared internally. Such temporal comparison will bring out the various inter-relationships and also their relative impact.

The present study reviews the growth of higher education in India in relation to the absorptive capacity of the labour market. It brings out the mismatch between the two in terms of unemployment among the higher educated persons and the waiting period they have to undergo for securing this first job. It also indicates the directions and trends the mismatch has taken and is likely to take in the near future. Besides listing out the important reasons for the mismatch, the study attempts to provide guidelines for policy making. It analyses the education and occupation matrices for a large number of numerically and strategically important occupation both in the private and public sector and points out the modal educational qualifications for the various jobs and also points out the other major educational qualifications which can be taken as important substitutes. The study also provides a critical appreciation of the manpower forecasts for the plan period 1970-83.

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(1) Q.U. Khan, Application of Manpower Requirement Approach to Educational Planning Indian Educational Review, Jan. 1973, Vol. 8, No.I - N.C.E.R.T. New-Delhi may be referred to for fuller and detailed discussion.

The study is based is the published data and therefore, many relevant issues could not be taken up in this study. For example, what are the views of the employers, students, parents of students, etc. regarding the expansion and utility of higher education. Whether the expectations of the students are fulfilled and they see higher education as fully relevant to their jobs. These questions can only be answered through a separate survey which is outside the scope of the present study. As the data are collected by various agencies they are not always comparable and collected with the same objective in view, as such the inferences drawn on the basis of these data should be taken as broad indications of the situation and not the exact situation itself. Another limitation of the data has been that they are not very up-to-date. Irrespective of these limitations, India is in a much confortable position and there are sufficient data for analysing the situation to a satisfactory extent.

In brief the study attempts to answer the following issues on the basis of published data at the national level only. There may be regional variations as all parts of the country are neither equally developed in terms of educational facilities nor in terms of socio-economic infrastructure. The socio-cultural milieu is also not uniform through out the length and breadth of the country. All the issues should, however, be appreciated in the context of the existing socio-policital framework which the nation has been committed and adhered to for such a long time. It is likely that different and quick results may be obtained if a new set of socio-political values is transplanted. But that will be merely an academic exercise hardly having any relevance to the actual conditions. The questions sought to be answered are :

(1) Can manpower requirements be the sole basis for expanding higher education?

(2) Is India over educated ?

(3) What is the quantum and nature of mismatch between the educational output and the jobs created?

(4) Should the mismatch arrest the further expansion of high education?

(5) What is the degree of flexibility in the higher educational qualifications for various jobs?

(6) How many jobs are professional education specific and how many are general. Is there substitution between these two categories of jobs?

(7) How can the absorptive capacity of the economy be increased to improve the intake of higher educated persons. What are its demographic implications?

(8) Whether "Unemployment" is the result of lack of jobs which the graduates could take up or that the graduates are 'unemployable' because they do not have any useful skills or abilities including general management or administration that employers could use.

CHAPTER II

HIGHER EDUCATION AND EDUCATIONAL PLANNING

During the plan period which began in 1951, India has recorded phenomenal growth at practically all levels and for all types of education. At present about one-fifth of India's total population is directly (students, teachers, other institutional staff, planners and administrators) or indirectly (publishers, stationery and book-sellers etc.) engaged in this industry. In 1975 there were 612.5 thousand institutions, 103 million students and three million teachers. In 1977-78 the expenditure on education was of the order of Rs. 25,548 million and this formed 24.5 per cent of the total public expenditure. India has at present created facilities to enrol virtually all the eligible pupils for the elementary education. All urban areas have facilities for elementary education and 80 per cent of rural habitations (accounting for 93 per cent of the total rural population) have a primary school within walking distance (1.5 kilometre) and over 60 per cent of habitations (72 per cent of the total rural population) have a middle school within 3 kilometres. If 100 per cent enrolment is not achieved at this stage it is not due to the non availability of institutional facilities but because of other factors such as non enrolment, dropout etc.

There has been a spectacular expansion at the secondary stage also although the vocational stream has not developed at the rate it was desired. The facilities for the secondary education remain so much under-utilised that the entire expansion of about three million students visualised in the five year plan 1978-83 is planned to be met by better and more efficient utilisation of the existing secondary schools.

There has been a rapid expansion of higher education also and in 1976-1977 India had 105 universities (this has increased to 110 now), 10 institutions deemed to be universities and 4,569 colleges. The total enrolment in these institutions in 1975 was more than 4 million and they employed 236 thousand teachers.

Since ancient time India has been having leading centres of learning and attracted students and scholars from other countries. In the medieval period some of the Islamic centres also acquired international repute, but unfortunately these traditions did not last and modern universities were established about a century and a quarter ago. The earliest of these were the universities of Bombay, Calcutta and Madras - all established in 1857. These universities were characterised by a unique pattern of being purely examining bodies. They were modled after the university of London. There main functions were to prepare and set up prescribed courses of study in the colleges affiliated to them, to examine candidates prepared in these colleges and to grant degrees. This system of affiliating colleges made it possible for the people in remote areas to have access to higher education. It also permitted considerable diversity in religious and social life while maintaining a common standard through the institution of a common examination. Later on unitary and residential universities were also set up and today there is a mixture of the federal affiliating unitary and residential universities.

1. Aims and functions of higher education

The national Commission on Education in 1966 stated "The destiny of India is now being shaped in her classrooms. In a world based on science and technology, it is education that determines the level of prosperity, welfare and security of the people. On the quality and number of persons coming out of our schools and colleges will depend our success in the great enterprise of national reconstruction whose principal objective is to raise the standard of living of our people".(1)

Besides the general functions that education has to discharge universities have some special responsibility. Their principal objective is to deepen man's understanding of the universe and of himself - in body, mind and spirit. They are the dwelling places of ideas and idealism. While the fundamental values of universities are unrelated to time, place or circumstances, their functions change in different situations. For example, at present their task is not confined to merely the two traditional functions of teaching and advancement of knowledge. At present they discharge the following functions also:

(i) To provide the right-kind of leadership in all walks of life

(ii) To identify gifted youths and help them develop their potential to the full

(iii) To provide society with requisite manpower.

The universities are, however, not performing one important function. They do not show any interest in the post educational career of their graduates. It may be debated whether universities' responsibility is not limited to the production of graduates. Are they supposed to follow the graduates in the employment market? And if yes up to what stage - first employment, first promotion or the whole career of working life. Some people will hold the view that as in the ordinary production of commodity a firm is not concerned very much after its products are accepted by the buyers, so the university should not be concerned after its services have been paid for by the State and/or the students. Actually the student is both the consumer of the university services and also its product. It is only if the universities view in the latter sense that they have the responsibility to follow up their graduates in the labour market at least to ensure that numerically all of them get employment and secondly that they do not have any serious drawback and deficiency in carrying out the job. In practice universities have been complacent and have not bothered as to what happens to their graduates. In summary, the universities are not apparently concerned enough to verify if they are providing the society with the requisite manpower!

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(1) Report of the Education Commission, (1964-66) Ministry of Education Government of India.

Though it is true that the Indian system of education was designed to meet the needs of an imperial administration within the limitations set by a feudal and traditional society, yet the present system contains the thinking and research of over three decades to meet the purposes of a modernising, democratic and socialistic society. Radical changes have taken place in its objectives, contents, teaching methods, programmes, the size and the composition of the student body, selection and professional preparation of teachers and also in its organisation. This, however, does not mean that there is no scope for further improvement. In a dynamic society no change is final, it merely gives rise to a new change. India's educational system, specially higher education is always making new experiements to meet the new challanges to bring about the desired social change and the economic development. It takes the individual as an end in himself and provides him with the widest opportunity to develop his potentialities to the full with due emphasis on social perspecitive. It is trying to reach all sections of the society and without any violent revolution. It cannot, however, be a magic wand that you wave it and get all your wishes fulfilled. It is only a powerful, sure and tried instrument to bring about the desired change.

Today's world is of automation and cybernetics. India hs to take immediate steps to remodel its higher education to impart the latest scientific and technical knowledge and skills. If this is not done, the gap between us and the advanced countries will become too wide to bridge later on. There is an urgent need to expand research and its systematic application

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to agriculture, industry and other sectors of life. In this context a reference to the latest Chinese draft outline plan (1978-1985) is worth quoting. The plan has laid down the goal to increase the number of professional scientific researchers to 800,000. It emphasises that by the end of this century, all departments and localities in China that can use machines must be fully mechanised, electrification must be realised in both urban and rural areas, the production processes in major industrial departments automated, advanced techniques extensively applied, labour productivity raised by big margins and a radical change brought about in industrial and agricultural production, so that the Chinese economy can take its place in the front ranks of the world.(1)

Higher education should also play a significant rôle in developing the rural areas. Actually it is the rural India which provides the most challenging opportunities to the educated people. The people in rural areas suffer from malnutrition, inadequate clothing, poor housing, higher incidence of illiteracy and lack of practically all types of infrastructure (roads, electricity, drinking water, health facilities and other community services.) According to the all India debt and investment survey 1971-1972 (Reserve Bank of India) 20 per cent of the rural households each had assets of less than Rs. 1000 - (US$ 125). There were only 4 per cent rural households who each had assets worth Rs. 50,000 (US$ 6250). Most of the agricultural operations in many parts of the country still continue to be traditional and manually operated. If this rural scene has to be changed and development to be ushered, higher education will have to play an important rôle. In this transformation the services of higher educated persons will be required on a large scale. The experience of Poland, in this regard, will be useful. Poland had been transformed from a rural society into a highly industralised economy even though it was surrounded by the industrialised West Europe. Higher education will make it possible to gradually create more productive and intellectual work for this rural people in their process of modernisation and development.

Defining higher education. It is difficult to precisely define higher education in the Indian context because there is a twilight zone within which secondary education ends and higher education begins. It is difficult to light up this zone and draw a dividing line between secondary education and higher education. The task becomes still more difficult when one is dealing with a long past period for the structuring of education at the final stage of secondary education or the beginning of higher education (university education) has been constantly changing. There has been ten, eleven and twelve years schooling followed by two years intermediate course or one-year pre-university class or pre-professional class. Recently the first degree course in general education (arts, science and commerce) has been remodeled from a two year to three year duration in many places. Since 1974 the government is trying to introduce 10+2+3 system uniformly in all the parts of the country. Of late there has been a rethinking in some quarters to replace this system by 8+4+3. However, this has not been officially accepted.

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(1) Report of Fang Yi, Member of the Political Bureau of the Central Committee, People's Republic of China.

At this point it may be worthwhile to mention the structure and pattern of vocational education and technical education also. This can be divided into three parts: one of them can be included in higher education e.g. engineering or agricultural polytechnics; another can be included in secondary education e.g. the various engineering trades provided by the Industrial Training Institutes (ITIs); and the third can be included in the elementary education - most of the non-engineering trades of the ITIs and other technical, commercial and vocational institutions run by different government departments and voluntary organisations.

In view of the difficulties stated above and also the fact that institutions may be running a variety of courses some of which may not be strictly of higher education level; it will not be possible to give a very clear cut definition of higher education. Therefore a working definition of higher education is taken to include all university degree courses. The intermediate course which consists of two academic years, the pre-university course, the pre-professional course provided in the universities and colleges and the polytechnic courses have been included in higher education. Similarly, correspondence courses for degree level education have also been included in higher education.

2. Educational development and planning

In India education is largely a state subject in the constitution. However, a multiplicity of authorities at different levels make decisions on all aspects of the situation. There are four distinct agencies which have been providing educational facilities in the country, viz., the central government, the state governments, the local authorities (not very relevant for the higher education) and the voluntary organisations. In higher education the university grants commission also plays an important rôle. The commission is charged with the function of allocating grants-in-aid from public funds to the universities and institutions of higher learning. While giving money for the promotion and co-ordination of higher education, the Commission makes efforts to ensure the maintenance of standards of teaching, examinations and research in universities. The Commission has, however, a non-mandatory character in giving the advice for setting up new universities. Actually the UGC representative in his testimony to the Estimate Committee of Parliament in 1965-66 pointed out that during the preceding decade six universities were set up without consulting the UGC. In the case of another six universities the state governments did consult the UGC but established them either in spite of the disagreement of the Commission or while the Commission was still considering the question.

Educational planning is also a joint endeavour of the Central and the State governments. A planning division in the Central Ministry of Education works in close liaison with the Education Division of the Planning Commission of the Government of India. On the basis of broad guidelines by the Planning Commission, tentative plans are prepared by the Central Ministries (responsible for some kind of education) and the States. Joint consultation on educational planning between the centre, the states and the Planning Commission is promoted in all-India forums like the Central Advisory Board of Education (CABE) and State Education Ministers' Conferences. Tentative plan programmes are discussed and examined at various levels before they are finally approved for inclusion in the five year plans.

A national staff college for educational planners and administrators has been established in 1970 as a successor institution to the Asian Institute of Educational Planning and Administration. The staff college organises pre-service and in-service training courses, conferences, workshops and seminars for all levels of education officers. It also undertakes, aids, promotes and co-ordinates research in various aspects of educational planning and administration.

Although there are so many agencies and organisations involved, educational planning by and large has been ad hoc and taken up as an aid to the general economic plan. There is no long term planning which becomes a serious weakness as far as higher education is concerned, because in higher education decisions taken today can yield some results only after five or six years. Therefore an educational plan based on the economic perspective of the next five years is not a real educational plan but only a translation of financial allocation (earmarked for the educational sector in the economic planned document). It is, therefore, no wonder that the first casualty, when resources are not enough, is education. The Indian educational planning does not take into account the socio-economic forces acting upon individuals and their reaction to them and perception of incentives. It is also true that sufficient co-ordination is lacking between different agencies responsible for the development of education.

In this context it will be worth while to look into the practice followed by the USSR which is the first country in the world to embark on planned management not only of its economy but also of education and personnel training. In USSR planning exercise, planning and development of higher education is taken by nature as a long term planning since specialist training and the organisation of staff for it and also acquisition of materials and equipment for higher education require a great deal of time. The period for which the anticipated demand for specialists is determined is about five years longer than the period covered by development planning for the corresponding sections of the national economy. The soviet plan also takes into account the social demand for higher education and adjusts it with the potentialities of the economy.

3. National policy on higher education

Government policy on higher education is a mixed one. On the one hand it wants to restrict admissions to higher education, specially the professional and technical education but on the other hand it has an open door policy also. This will be clear from the following National Policy Statements on high education adopted after the submission of the Report by the Education Commission 1964-66.

(1) The number of whole time students to be admitted to a college or a university department should be determined with reference to the laboratory, library and other facilities and to the strength of staff.

(2) Considerable care is needed in establishing new universities. These should be started only after an adequate provision of funds has been made for the purpose and due care has been taken to ensure proper standards.

(3) Special attention should be given to the organisation of post graduate courses and to the improvement of standards of training and research at this level.

(4) Centres of advanced studies should be strengthened and a small number of "clusters of centres" aiming at the highest standards in research and training should be established.

(5) There is need to give increased support to research in universities generally.

(6) Technical education to be linked to industrial and manpower needs.

(7) Expansion of part time and correspondence courses should be done on a large scale.

In the above statements the main emphasis is given on the quality of higher education and increased attention to research in universities. Except the technical education, no other kind of higher education is linked with industrial or manpower needs. The main consideration for expansion of higher education is the availability of funds for the adequate infrastructure and staff. The labour market conditions do not seem at all important specially in view of the fact that those who do not get admission in the existing colleges and universities may do so through part time courses or correspondence courses.

In spite of large scale expansion of higher education government also wants to discharge its various social responsibilities. One of the aims of university education in India is that it should lessen the inequalities - regional as well as social. At present majority of students enrolled in universities and colleges is from urban areas. One out of eleven students in these institutions is from rural areas. Similarly women enrolment is less than one fifth of the man enrolment. Weaker sections of the society (scheduled castes, scheduled tribes, linguistic and religious minorities) also have poor representation. In the context if higher education is to bridge the gap, the only way is to spread the net still wider and deeper. There are various scholarship programmes for this purpose besides some concessions (academic) and reservations of admission places in different institutions of higher education. Noteworthy among them are the national scholarship scheme, national loans scholarship scheme, scholarship for talented children in rural areas, and scholarships for study in residential schools. Increasing facilities are also being made available in various institutions of higher learning for correspondence courses, part-time and over-time instructions. Similarly linguistic and religious minorities have been given one consideration in the provision of educational facilities.

4. Dimension and trends of expansion

After achieving independence and resorting to planned development it was inevitable that education should be expanded at all levels. Actually three factors were basic in creating educational facilities at the various levels viz. (1) constitutional directive to universalise elementary education (2) the need of the economy for educated and skilled manpower and (3) the over all desire of the people to get themselves educated. As a result of these factors the enrolment in educational institutions was likely to grow at a fast rate during the early period of development. This is exactly what has happened to higher education in India. An analysis of the trend of growth in enrolment, out-turn and expenditure on higher education institutions is being presented in the following paragraphs. The analysis covers the period from 1950-51 to 1975-76 and is based on the published data. As already stated the analysis is only at the national level.

(1) Enrolment

There has been a ten-fold increase in enrolment at the university stage during the 25 year period (1950-1975). In 1950-51 the enrolment was about four hundred thousand and it has risen to about four million in 1975-76. (It may be touching the figure of about five million in 1978-79). Whereas the under graduate enrolment, during this period, increased by seven times the graduate and the post graduate level enrolment registered an increase of about fifteen times each. As a result of this the proportion of under graduate enrolments in total enrolment at higher education has come down to 40 per cent from about 58 per cent in 1950-51. On the other hand the graduate and post graduate level enrolment has moved up from 36.8 per cent to 52.8 per cent and from 5.5 per cent to 6.9 per cent respectively.

Whereas the enrolment at the post graduate level is comparable over the time, the enrolment at the under graduate and graduate levels is not because over the period quite a few structural changes in the duration and class composition have taken place from time to time both in these stages and also at the final school stage. These changes have generally affected the first year enrolment of the two stages. For example in 1950-51 graduation (B.A., B.Sc. and B. Com.) course was of two years duration but now it is of three years. Similarly in 1950-51 many states had matriculation examination after 10 years but with the introduction of higher secondary system and abolition of intermediate examination in many states the under graduate university enrolment got reduced. Table II.1 presents the data

Table II.1. Number of students in universities and colleges by stages ('000s)

Year	Undergraduate(1)		Graduate		Postgraduate			
	Number	%	Number	%	Number	%	Total	%
1950-51	226.2	57.7	144.3	36.8	21.4	5.5	396.7(2)	100.0
1955-56	430.1	60.3	249.0	35.0	33.6	4.7	712.7	100.0
1960-61	514.2	49.1	471.7	44.9	64.0	6.1	1 049.9	100.0
1965-66	684.3	39.6	944.0	54.6	100.5	5.8	1 728.8	100.0
1970-71	1 080.8	36.0	1 746.1	58.2	174.5	5.8	3 001.4	100.0
1971-72	1 232.0	37.8	1 835.1	56.3	195.2	6.0	3 262.3	100.0
1972-73	1 324.9	38.3	1 920.2	55.6	211.0	6.1	3 456.1	100.0
1973-74	1 388.3	38.8	1 964.5	54.8	231.2	6.5	3 584.0	100.0
1974-75 (P)	1 510.0	39.3	2 075.0	54.0	258.9	6.7	3 843.9	100.0
1975-76 (P)	1 640.0	40.3	214.67	52.8	281.7	6.9	4 068.4	100.0

(1) Represents intermediate, pre-university, pre-professional and certificate/diploma level enrolment (excluding polytechnics and teacher's training school enrolment outside the university system).

(2) Includes 4.8 thousand students whose breakup by stage is not available.

Notes: P = Provisional estimate.

Sources: (1) Education in Universities in India - Ministry of Education (1950-51 to 1960-61).
(2) University Development in India - University Grants Commission, New Delhi. (1965-66 and onward).

on enrolment in universities and colleges by three broad stages. The undergraduate stage represents pre-university pre-professional, intermediate, certificate and diploma level courses; the graduate level stage covers bachelor and honours degree courses; and the post graduate stage includes enrolment of master degrees and research.

Table II.2 and table II.3 present enrolment data for higher education by faculty. Table II.2 provides absolute enrolment data and table II.3 gives the percentage distribution. While over the period 1950-51 to 1975-76 there has been appreciable increase in the enrolment in all faculties but of late specially after 1971, the professional faculties have not expanded (except a marginal increase in the enrolment of medicine, education and law faculties). This is very much true of the faculties of agriculture and veterinary science. The science faculty has also not expanded much after 1971 and there are annual variations in its enrolment. The only faculties which have continued to expand without any break are those of arts and commerce. The reason for this trend is the fact that expansion in professional faculties is controlled but not so for other faculties (law faculty is also not planned). Table II.3 also shows that the relative proportion for some of the professional faculties has remained more or less constant over the long period of 25 years. The traditional faculties of arts, science and commerce have claimed about 87 per cent of the total enrolment at the university stage during this period. Of course within the three faculties the proportion of science has declined and that of commerce increased by the same percentage points approximately. It is very unlikely that during the next five years there will be any marked change in the relative proportions of enrolments in various faculties except that commerce and engineering faculties may record higher enrolments. It seems that the expansion in arts and commerce courses has been dictated not so much by the enrolment capacity of the institutions concerned or the employment opportunities available but by the pressure of public demand.

Besides the above mentioned enrolment in regular institutional courses, many students pursue higher education; specially general arts, commerce education, etc., through the correspondence courses. The enrolment under the correspondence course during the latest five years for which data are available was as follows:-

Table II.2. Enrolment in colleges and universities by faculty 1950-51 to 1975-76 (000's)

Year 1	Arts 2	Science 3	Commerce 4	Education 5	Engineering 6	Medicine 7	Agriculture 8	Veterinary science 9	Law 10	Others 11	Total 12
1950-51	180.8	127.2	34.1	4.1	12.1	15.3	4.7	1.1	13.6	3.7	396.7
1955-56	361.9	197.5	64.2	11.4	19.9	21.4	8.2	3.1	20.2	5.0	712.8
1960-61	483.0	302.7	90.2	19.0	45.4	35.2	27.6	5.4	27.3	14.1	1 049.9
1965-66	706.6	565.3	165.3	33.5	85.6	70.1	51.2	6.3	37.3	7.6	1 728.8
1970-71	1 329.6	948.0	344.1	56.9	90.0	97.6	43.4	6.2	70.6	14.8	3 001.2
1971-72	1 474.0	988.1	396.0	63.6	85.5	102.4	42.2	6.1	84.5	19.8	3 262.3
1972-73	1 583.9	1 008.5	432.9	67.8	85.2	107.9	43.0	6.0	98.9	22.1	3 456.1
1973-74	1 657.2	986.1	484.6	70.7	89.3	110.4	43.4	6.4	113.2	22.8	3 584.0
1975-76 (P)	1 998.3	999.3	572.7	76.6	99.1	111.5	43.4	6.3	141.3	22.7	4 068.4

Notes: (P)=Provisional estimate. Figures may not add to total due to rounding off.

Sources: (1) Fact Book on Manpower Pl. II - Institute of Applied Manpower Research, New Delhi (1950-1965).
(2) Annual Reports, University Grants Commission, New Delhi, for data after 1965-66.

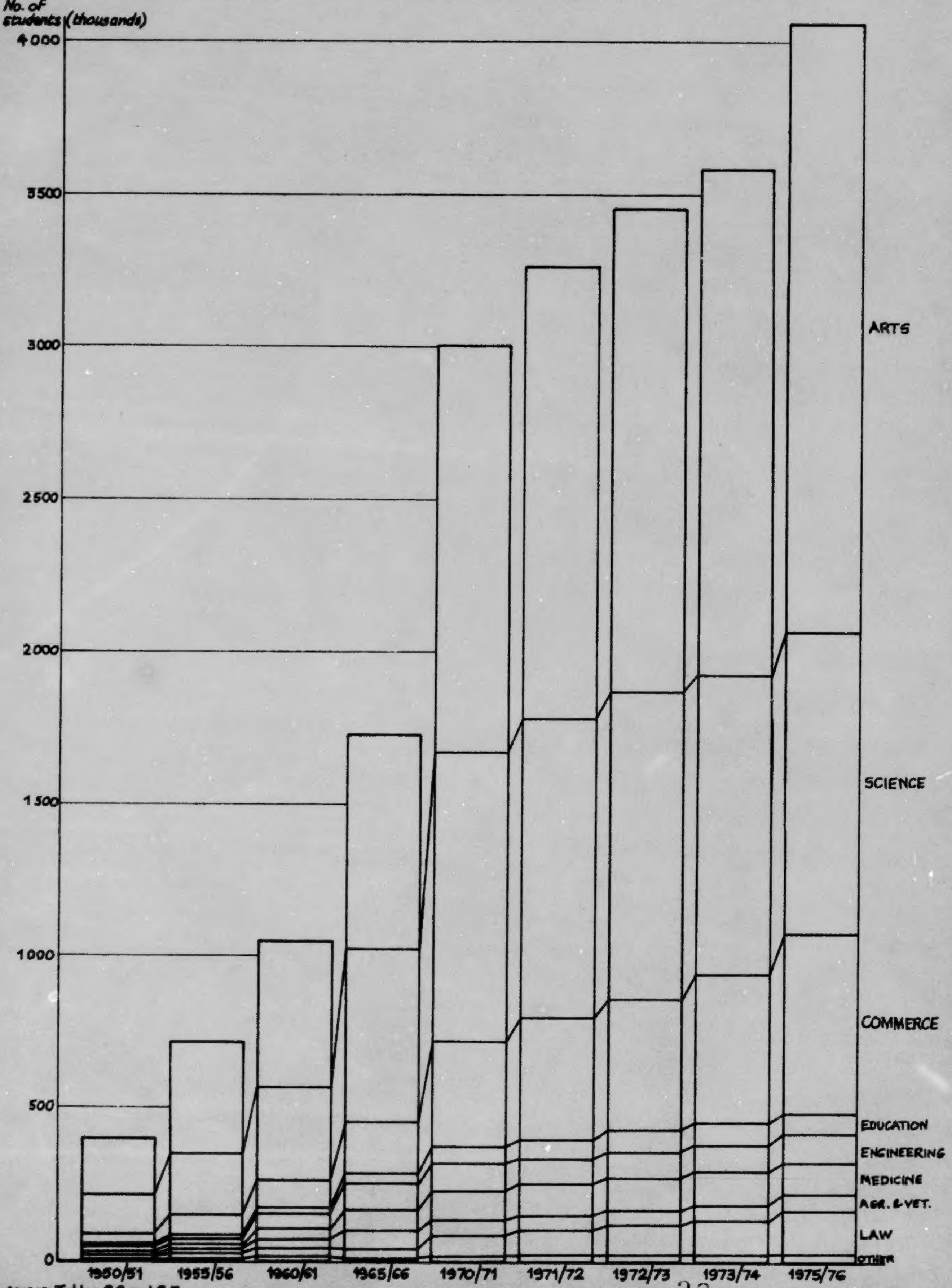
Table II.3. Percentage distribution of enrolment in colleges and universities by faculty

Year	Arts	Science	Commerce	Education	Engineering	Medicine	Agriculture	Veterinary science	Law	Others	Total
1	2	3	4	5	6	7	8	9	10	11	12
1950-51	45.6	32.1	8.6	1.0	3.1	3.9	1.2	0.3	3.4	0.9	100.0
1955-56	50.8	27.7	9.0	1.6	2.8	3.0	1.2	0.4	2.8	0.7	100.0
1960-61	46.0	28.8	8.6	1.8	4.3	3.4	2.6	0.5	2.6	1.4	100.0
1965-66	40.9	32.7	9.6	1.9	5.0	4.0	3.0	0.4	2.1	0.4	100.0
1970-71	44.3	31.6	11.5	1.9	3.0	3.3	1.4	0.2	2.3	0.5	100.0
1971-72	45.2	30.3	12.1	2.0	2.6	3.1	1.3	0.2	2.6	0.6	100.0
1972-73	45.8	29.2	12.5	2.0	2.5	3.1	1.2	0.2	2.9	0.6	100.0
1973-74	46.2	27.5	13.5	2.0	2.5	3.1	1.2	0.2	3.2	0.6	100.0
1975-76 (P)	49.1	24.6	14.1	1.9	2.4	2.7	1.1	0.2	3.5	0.6	100.0

Notes: (P)-Provisional estimate. Figures may not add to 100 due to rounding off.

Sources: Same as in Table II.2.

GRAPH 1. Enrolment in colleges and universities by faculty, 1950/51-1975/76



SOURCE: Tables 2.2 and 2.3

Year	Enrolment
1971-1972	48 333
1972-1973	46 008
1973-1974	57 166
1974-1975	N.A.
1975-1976	73 477

How India stands in higher education vis-a-vis other countries? A synoptic picture of this can be had from the data given in Table II.4. Table II.4 presents information on the annual increase in the enrolment ratios for the third level of education in some selected countries during the period 1960 and 1974 (Pakistan for 1960-70 and U.K. for 1960-1973). The data for the table have been taken from the Unesco's Statistical Year Book and are based on the definitions adopted by them. The enrolment ratios have been calculated uniformly with reference to the age group 20-24 years. The table shows that in 1960 there were many countries both developed and developing which had higher ratios of students in the age group 20-24 enrolled in higher education than what India had. In that year India had only 2.54 per cent of the respective age group enrolled at the third level of education. In the same year many countries had more than 10 per cent of the age group (20-24) enrolled at the third level. In 1974 these countries not only improved the ratios but also recorded a higher annual increase in percentage points. For example U.S.A. and Canada had 32.67 and 16.04 per cent of the students in the age group 20-24 enrolled in higher education in 1960. These percentages improved to 53.61 and 34.69 respectively in 1974 giving an annual change in percentage points of the order of 1.54 and 1.33 respectively. Against this India's progress has been very meagre - from 2.54 per cent in 1960 to 4.45 per cent in 1974 - giving an annual increase of only 0.14 per cent points. India has, however, done better than its neighbours Bangladesh, Pakistan, Burma and Sri Lanka.

Another way of looking at the progress of enrolment in the third level of education is to compare it as proportion of first and second levels of education and also as per certain number of inhabitants. This analysis is presented in table II.5 for India along with other selected countries for the year around 1974. The ratio of third level enrolment as percentage of first and second level of enrolment at any point of time depends on the relative base enrolment in the first and second levels. Therefore, a low

Table II.4 Annual increase in the enrolment ratios for the third level of education in selected countries

Country	Age Group	Base Year Year	 Enrolment ratio	Latest Available Year Year	 Enrolment ratio	Annual change in per cent-points
1	2	3	4	5	6	7
Egypt	20-24	1960	4.86	1974	17.34	0.89
Canada	20-24	1960	16.04	1974	34.69	1.33
United States of America	20-24	1960	32.07	1974	53.61	1.54
Argentina	20-24	1960	10.88	1974	23.79	0.92
Brazil	20-24	1960	1.57	1974	9.79	0.59
Chile	20-24	1960	4.16	1974	16.48	0.88
Bangladesh	20-24	1960	0.57	1974	2.92	0.17
Burma	20-24	1960	0.92	1972	2.43	0.13
India	20-24	1960	2.54	1974	4.45	0.14
Indonesia	20-24	1960	0.70	1974	3.62	0.21
Japan	20-24	1960	9.45	1974	22.14	0.91
Korea (Republic of)	20-24	1960	4.58	1974	9.60	0.36
Pakistan	20-24	1960	1.01	1970	2.50	0.15
Philippines	20-24	1960	12.65	1974	17.35	0.34
Sri Lanka	20-24	1960	0.58	1974	1.27	0.05
Turkey	20-24	1960	2.86	1974	6.59	0.27
France	20-24	1960	7.45	1974	18.04	0.76
German Democratic Rep.	20.24	1960	16.27	1974	24.50	0.56
Germany(Fed.Rep.of)	20-24	1960	6.11	1974	19.35	0.95
Italy	20-24	1960	6.61	1974	23.96	1.24
Poland	20-24	1960	9.17	1974	15.72	0.47
United Kingdom	20-24	1960	8.50	1973	16.22	0.59
Yugoslavia	20-24	1960	8.61	1974	18.65	0.72
Australia	20-24	1960	13.13	1974	22.17	0.65
U.S.S.R.	20-24	1960	11.02	1974	22.00	0.78

Source: Statistical Year Book, Unesco, 1976.

Table II.5. Third level enrolment as per cent of population and first and second level enrolments for some selected countries around 1974

Country	Third Level Enrolment as Per Cent of First level enrolment	Third Level Enrolment as Per Cent of Second level enrolment	Third level enrolment as per 100,000 population
1	2	3	4
Egypt	9.8	20.6	1 121
Canada	27.0	26.9	3 140
United States of America	37.7	45.0	4 915
Argentina	13.9	41.6	1 982
Brazil	5.0	56.8	916
Chile	6.5	33.3	1 482
Burma	1.7	6.5	194
India	3.5	9.1	380(1)
Indonesia	1.7	13.0	217
Japan	20.3	44.7	2 050
Korea (Republic of)	5.3	9.4	857
Pakistan	2.2	6.5	164
Philippines	10.0	33.9	1 843
Sri Lanka	1.4	1.8	141
Turkey	4.1	14.2	572
France	21.2	20.0	1 885
German Democratic Republic	11.8	6.7	1 815
Germany (Fed. Republic of)	12.1	21.6	1 269
Italy	18.8	20.3	1 679
Poland	11.7	35.4	1 549
United Kingdom (England & Wales)	10.2	12.9	1 116
Yugoslavia	12.5	43.4	1 696
Australia	14.3	24.0	1 908
U.S.S.R.	12.8	45.6	1 885

(1) On the basis of data given in Table I, this figure will be about 650.

Source: Statistical Year Book, 1976, Unesco.

enrolment ratio of third level of first or the second level cannot be per se interpreted as poor performance of the third level if enrolments in the first and second levels are very high. Similarly a high ratio of third level enrolment to first and second level enrolment may be possible if the enrolment in the latter two levels is very poor. It is, therefore, very difficult to form a quick judgment on the basis of the ratios given in columns 2 and 3 of Table II.5. Nevertheless the variations in the ratios are so obvious and the high ratios are generally associated with developed countries, that it is not impossible to form an opinion that India has not a very comfortable position in the group of nations. This becomes very clear when the data on enrolment at third level of education as per 100,000 inhabitants given in column 4 of Table II.5 is seen. All the developed countries have about 2,000 or more enrolment as per 100,000 population. Against this India has about 400 pupils enrolled per 100,000 population. This ratio was better only in relation to India's immediate neighbours like Pakistan, Bangladesh, Burma and Sri Lanka.

(2) Out-turn

Table II.6 presents data on out-turn of graduates by faculty at two levels only viz., graduate and post graduate. The out turn data follow the pattern of enrolment except for wastage, pass percentages and change in the structure of the course (i.e. duration). Another factor to be remembered while going through the out-turn data is that although in a particular year people may be graduating as post graduates or simply as graduates but many of the graduates in the subsequent academic year may enrol for post graduate courses. Therefore, over a period a number of post graduates should be deducted from the number of graduates to have an idea of the total first degree holders available for labour market. Another method to have an idea of the magnitude will be first to count and concentrate on the number of graduates for the post graduates will come only from them. This India is adding about half a million higher educated persons to its labour force every year. In other words, one out of every thousand persons is becoming a graduate every year.

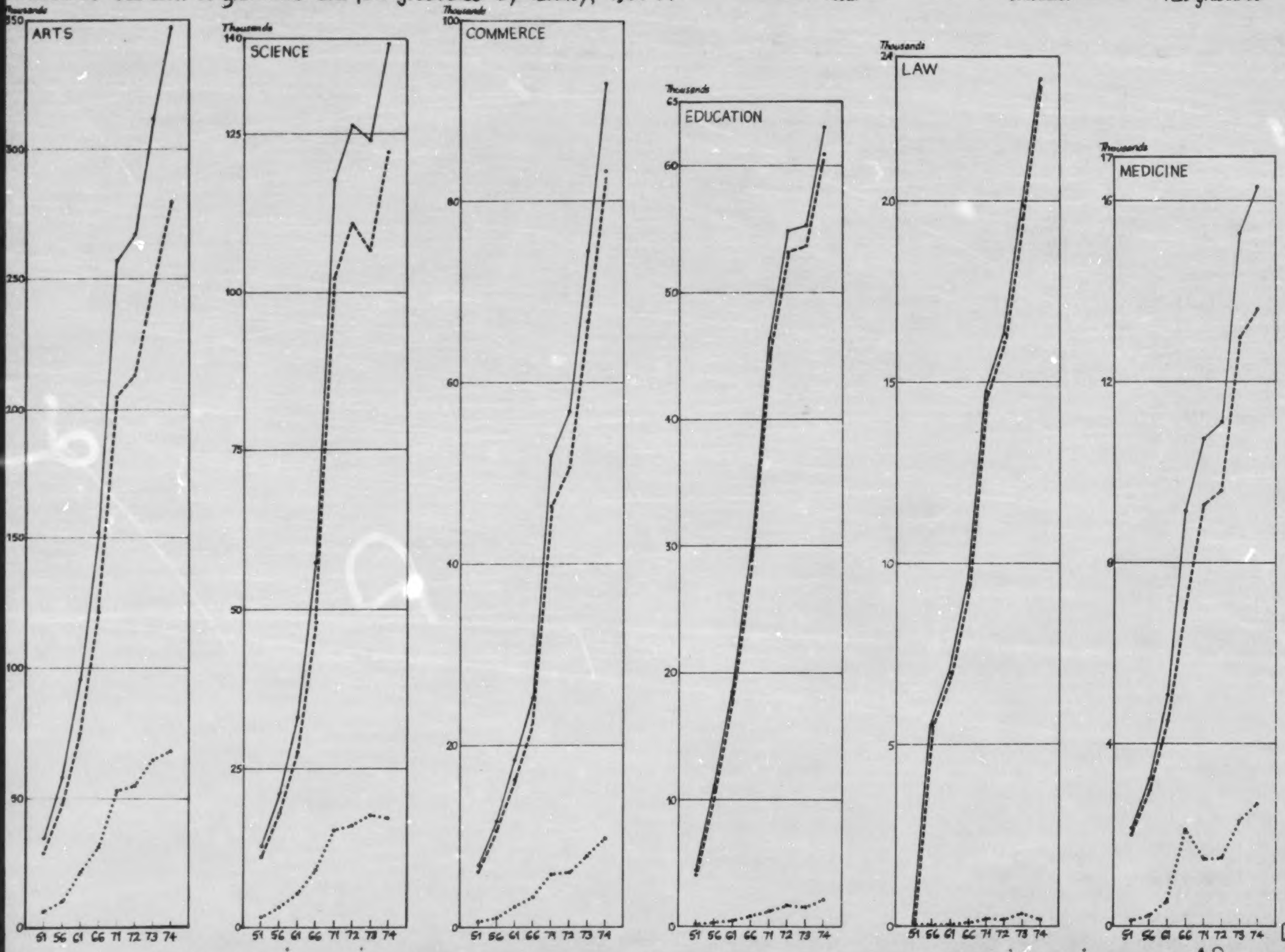
Table II.6. Faculty wise out turn of graduates and post-graduates in India, 1951 to 1974.

	YEAR							
	1951	1956	1961	1966	1971	1972	1973	1974
Arts								
Graduate	28 611	47 806	74 669	121 910	204 281	213 049	247 948	279 828
Post-graduate	6 527	10 747	21 404	31 303	52 757	54 615	64 465	67 662
Total	35 138	58 553	96 073	152 213	257 038	267 664	312 413	347 490
Commerce								
Graduate	6 066	10 536	16 207	22 070	46 418	50 835	66 899	83 381
Post-graduate	683	1 049	2 253	3 188	5 726	5 922	7 758	9 701
Total	6 749	11 585	18 460	25 158	52 144	56 757	74 657	93 082
Science								
Graduate	11 168	17 935	27 589	48 104	102 055	110 606	106 695	121 901
Post-graduate	1 680	2 994	5 243	9 261	15 546	15 849	17 433	17 161
Total	12 848	20 929	32 832	57 365	117 601	126 455	124 128	139 062
Law								
Graduate	73	5 590	6 866	9 257	14 543	16 112	19 504	23 159
Post-graduate	15	37	81	111	227	220	390	221
Total	88	5 627	6 947	9 368	14 770	16 332	19 894	23 380
Medicine								
Graduate	2 036	2 987	4 515	7 013	9 285	9 620	13 000	13 608
Post-graduate	113	238	559	2 138	1 477	1 492	2 306	2 728
Total	2 149	3 225	5 074	9 151	10 762	11 112	15 306	16 336
Veterinary Science								
Graduate	172	492	850	802	1 013	1 012	907	1 018
Post-graduate	-	-	86	211	238	276	195	249
Total	172	492	936	1 013	1 251	1 288	1 102	1 267
Agriculture								
Graduate	1 061	808(1)	2 612(1)	4 524(1)	5 280	5 657	4 723	4 610
Post-graduate	151	187	569	1 107(1)	1 571	1 499	1 517	1 419
Total	1 212	995	3 181	4 631	6 851	7 156	6 240	6 029
Education								
Graduate	4 257	10 678	17 972	28 826	47 958	53 169	53 676	60 837
Post-graduate	137	364	514	854	1 288	1 777	1 604	2 146
Total	4 394	11 042	18 486	29 680	49 246	54 946	52 280	62 983
Engineering								
Graduate	2 693	4 337	7 026	13 051	19 765	17 315	14 125	13 491
Post-graduate	82	129	502	1 445	1 161	1 051	1 409	1 268
Total	2 775	4 466	7 528	14 496	20 926	18 366	15 534	14 759
Others								
Graduate	39	171	651	7 751	4 702	4 026	3 327	4 284
Post-graduate	1	107	175	736	528	345	827	1 038
Total	40	278	826	8 487	5 230	4 371	4 254	5 322
TOTAL								
Graduate	56 176	101 340	158 957	263 308	455 300	481 401	530 804	606 117
Post-graduate	9 389	15 852	31 386	50 354	80 519	83 046	97 904	103 593
Total	65 565	117 192	190 343	313 662	535 819	564 447	628 708	709 710

(1) From the Indian Council of agricultural research, New Delhi.

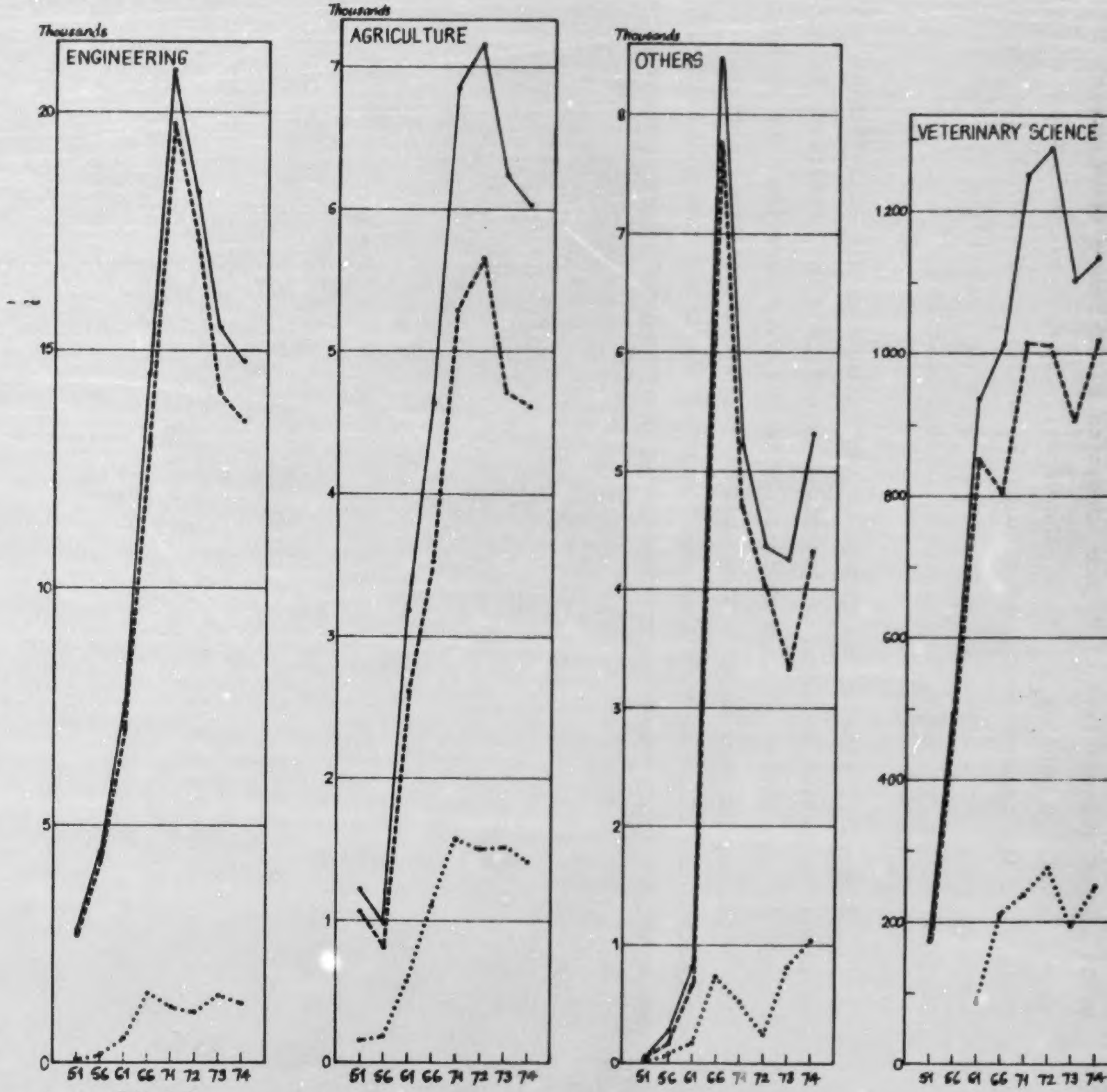
Sources:
- Fact Book on Manpower, Part II, Institute of applied manpower research, New Delhi.
- University Grant Commission, University Development, New Delhi.
- Ministry of Education, New Delhi.
- Survey of facilities, technical education in India, Ministry of Education, New Delhi.
- Examination results (degree only) U.G.C. (Unpublished data for the years 1971 to 1974).

GRAPH 2. Out-turn of graduates and post-graduates by faculty, 1951-74



[contd...

GRAPH 2 (continued).



SOURCE: Table 2.6

5. Educational expenditure

Information on expenditure on education is not of direct interest for manpower planning. It is, however, essential for educational planning decisions. The analysis of expenditure on education is also of special interest since it is again and again pointed out that proportionately large sums are being spent on higher education. It is also useful to explore the economic viability of different alternatives of higher education to achieve a given amount of highly qualified manpower. It is, therefore, proposed to present the relative changes in the proportionate expenditure on various constituents like universities and colleges; and schools and also within the higher education separately for colleges of general education and professional education, etc., on an all India basis.

Table II.7 sums up the growth of expenditure on all education as well as higher education in terms of (a) total expenditure (b) proportion of national income (c) per capita and per student. From slightly more than one sixth of the total expenditure on education in 1950-51, the expenditure on higher education has risen to more than one fourth of the total expenditure in 1975-76. Over the 25 year period the expenditure on higher education has gone up by 26 times while the total expenditure on education has gone up by fifteen fold only. This should be read in the light of a low base figure in higher education. India is spending at present about 4 per cent of its G.N.P. on education. The relative cost structure of higher education vis-à-vis school education is that in terms of per student institutional cost, higher education is about ten times more expensive.

It is interesting to review the trend of the relative share of different institutions (imparting higher education) in the total government assistance to their direct (recurring) expenditure. This is indicated by the following figures:-

Year	Universities	Research Institutions	Colleges for general education	Colleges for professional special education	Total
1950-51	23.7	6.7	33.1	36.5	100.0
1955-56	24.5	9.6	30.0	35.9	100.0
1960-61	22.5	8.5	28.7	30.3	100.0
1965-66	30.0	2.2	20.9	47.2	100.0
1968-69	23.2	1.8	25.6	49.4	100.0

Table II.7. Expenditure on education

Year	Expenditure(*) on all types of education	Expenditure on higher education	Expenditure(*) on total Educ. as % of GNP	Expenditure on higher education as % of GNP	Expenditure on higher education as % of total expenditure	Per capita expenditure on all education (Rs.)	Per capita expenditure on higher education (Rs.)	Per student expenditure on all education (Rs.)	Per student expenditure on higher education (Rs.)
1	2	3	4	5	6	7	8	9	10
1950-51	1 143.8	180.5	1.3	0.2	15.8	3.18	0.50	44.77	504
1955-56	1 896.6	365.9	2.0	0.4	19.3	4.84	0.93	55.90	610
1960-61	3 443.8	769.4	2.6	0.6	22.3	7.91	1.76	71.80	868
1965-66	6 220.2	1 191.4	3.0	0.8	25.3	12.82	3.24	88.02	1 063
1969-70	9 909.5	1 689.6	3.2	0.9	29.3	18.70	5.48	122.72	1 194
1975-76 (P)	17 482.0	4 674.0	-	-	26.7	-	-	-	-

Note: (P)=Provisional and does not include expenditure on Direction and Inspection, Buildings, Hostels, Scholarships, Equipment and other items (about 7-8% of total expenditure).

(*) Figures in this columns are in million of rupees.

Source: (1) Financing of Higher Education in India, J.L. Azad, Sterling Publishers Pvt. Ltd., New Delhi 1975 (for data up to 1969-71).
(2) Country Report for India - Fourth Regional Conference of Ministers of Education in July-August 1978 at Columbo.

From the above data it is clear that government assistance has been increasing for the professional education substantially although the enrolment has been increasing in the colleges for general education at a much faster rate. How have then colleges for general education financed themselves? The answer to this question is found in over-crowding of these institutions and also heavier reliance on private sources in comparsion with professional institutions. The contribution of private sources (fees and endowments) in the two types of institutions for some of the years is presented below.

Year	Colleges for General Education		Colleges for professional education	
	Public Sources	Private Sources	Public Sources	Private Sources
1950-51	38	62	75	25
1955-56	34	66	71	29
1960-61	39	61	74	26
1965-66	40	60	77	23
1968-69	46	54	79	21

These data and those given earlier establish the fact that government is paying more attention to the professional and technical education which is planned and based on manpower consideration. As far as general education is concerned its share in its total expenditure is less than 50 per cent and further the rôle of public expenditure in general education in the total higher education is not very encouraging. This analysis, therefore, very clearly establishes another fact that people are interested in general education to such an extent that they even do not mind to pay more than 50 per cent of its institutional cost from their own sources in the form of fees and contributions by the private endowments.

How India stands with regard to educational expenditure (public expenditure) in relation to some other countries can be seen from Tables II.8 and II.9. As the method of financing education differs from country to country, the data are not very strictly comparable. Nevertheless they do give some idea of the inter-level distribution of public expenditure and its ratio to the gross national product and total public expenditure including expenditure on education. As education is heavily subsidised in India, the public expenditure on education forms a large proportion of the total public expenditure and also it now forms about 3 per cent of the G.N.P. Further details on these may be seen from Table II.8 and II.9.

Table II.8. Percentage distribution of public current expenditure on education by levels of education in selected countries

Country 1	Reference year 2	1st Level education 3	2nd Level education 4	3rd Level education 5	Not distributed and other 6
Egypt	1974	(2)	70.6	29.4	(1)
Canada	1974	60.4	→	26.5	13.1
United States of America	1974	68.1	→	31.9	(2)
Argentina	1974	32.0	23.4	18.9	25.6
Brazil	1973	45.5	16.9	23.6	14.0
Chile	1974	23.5	10.1	49.9	16.2
Bangladesh	1973	43.6	22.1	21.1	13.2
Burma	1971	33.9	42.8	16.8	6.5
India	1974	49.2	32.7	13.6	4.4
Indonesia	1971	47.8	33.6	7.9	10.7
Japan	1974	40.1	37.4	10.5	12.0
Korea (Republic of)	1973	62.1	25.7	7.7	4.5
Pakistan	1975	41.8	31.0	17.3	9.9
Philippines	1975	80.0	8.0	5.4	6.6
Sri Lanka	1973	34.6	53.6	7.5	4.4
France	1974	28.9	57.6	4.0	9.6
German Democratic Rep.	1974	(2)	56.8	21.0	14.0
Germany (Federal Rep. of)	1974	31.4	30.5	18.8	19.3
Italy	1974	49.6	13.9	21.2	15.3
Poland	1974	36.9	24.4	22.6	16.1
United Kingdom	1973	24.2	41.7	25.6	8.8
Yugoslavia	1974	49.2	25.7	15.2	8.2
U.S.S.R.	1974	20.9	54.7	13.3	12.1

(1) Nil.
(2) Data included elsewhere.

Note: → = The figure immediately to the left of the arrow includes data relative to the column where this symbol is indicated.

Source: Statistical Year Book, Unesco, 1976.

Table II.9. Public expenditure on education as per cent of gross national product and as per cent of total public expenditure in selected countries around 1974

	Public Expenditure on Education as Per Cent of			
	GNP		Total public expenditure	
Country	Reference year	Ratio	Reference year	Ratio
1	2	3	4	5
Egypt	1974	5.4	1973	18.4
Canada	1974	7.6	1973	21.2
United States of America	1974	6.3	1974	21.1
Argentina	1974	4.0	1974	18.8
Brazil	1973	2.9	1974	21.1
Chile	1974	3.8	1974	12.5
Bangladesh	1975	1.2	1975	11.7
Burma	1971	3.4	1971	18.4
India	1970	2.8	1975	26.1
Japan	1974	5.1	1974	21.4
Korea (Republic of)	1973	4.1	1973	22.8
Pakistan	1975	2.3	1975	5.8
Philippines	1975	1.6	1975	9.4
Sri Lanka	1974	2.8	1974	10.0
Turkey	1972	5.6	1972	20.6
France	1974	4.7	1974	24.1
German Democratic Rep.	1974	5.6	1974	7.6
Germany (Federal Rep. of)	1974	4.5	1974	14.4
Italy	1974	5.2	1974	13.8
Poland	1974	3.7	1974	9.0
Yugoslavia	1974	6.0	-	-
Australia	1974	6.4	1974	15.8
U.S.S.R.	1974	7.6	1974	13.6

Source: Statistical Year Book, Unesco, 1976.

6. Educational inflation

During the last three decades the employment opportunities for higher educated persons have been increasing from year to year but the out-turn from educational institutions has been growing at a faster rate. This has resulted in diminishing the chances of higher educated people getting appropriate employment. In increasing number they have to be content with jobs lower in scale both socially and economically. There are some posts meant for the higher educated persons but actually occupied by less qualified people in view of their practical experience. This has happened in the past on quite a large scale specially in the private sector. As more educationally qualified persons become easily available this proportion is declining. Precise data are, however, not readily available on this aspect. Such a situation in the normal circumstances should have diminished the pressure on demand for admission to higher education but this has not precisely happened so the events, in fact, have been contrary. As the expansion at the second level of education is taking place and the graduates of this level see that the jobs meant for them are being taken up by the higher educated persons, they exert greater presure for admissions to higher education as the only method to secure jobs meant for people with secondary education. They could have stopped pursuing higher education provided they were allowed to settle down to secondary educationally qualified jobs or were totally denied admissions to higher education. Both these things have not and cannot be easily done in India. It is difficult to deny admission to any kind of higher education specially when there is no responsibility attached to such education for providing a job. Similarly employers also cannot be told not to recruit better qualified persons if they offer themselves on cheaper salaries. Apart from the employers' objection such a policy is also likely to be opposed by the university graduates for they will argue that they should be selected first as they possess better qualifications and also that they should be on the priority list of employment.

The eagerness to gain admission to higher education is, therefore, intensified because of competition from higher educated persons. And this results in educational inflation. Generally people do not see, in the beginning, the harm such inflation does. It profits a good many (in the form of getting some job at least) and seems to do only marginal harm to others. The harmful features of the situation becomes clear when inflation gets fully established and there appears all pervading unemployment of the educated persons. This is what is happening to India today. The situation is getting worse because of the relatively slow progress of the economy - specially of those sectors of the economy which absorb a large proportion of higher educated manpower.

At this stage a big question before the educational authorities is that should they stop the quantitative growth of higher education because manpower situation warranted by the poor progress of the economy gives them a red signal or should they continue to create places for those who deserve and demand it. Neither of the two seems to be an answer. The State can cut down admissions by withdrawing funds, but what about the privately financed education. The private institutions can only be asked to conform to the prescribed academic standards and requirements. Actually in practice the government also cannot resist the pressure and this is borne out by the past experience. To relieve the universities and colleges from direct pressure and over crowding it has to institute correspondence courses and start part-time education. This as far as education and labour market correspondence is concerned has one and the same effect.

7. Vocational education fallacy

There is a strong view that unemployment of higher educated manpower can be reduced if a large number of vocational courses are opened and students at the secondary stage are transferred to these courses. A very strong argument in favour of this view point is provided by Balogh who advocates that since the developing countries have a predominant agricultural and unorganised small scale industrial sector which may be employing, in some countries as large as 80 per cent of the total labour force (as in India), there should be a large scale development of agricultural and other vocational programmes within the schools at all levels. According to him present educational facilities (specially the general arts and science) constitute an obstacle to rural progress for this academic education does not train people for agriculture results in the flight of people from villages to towns and also creates attitudes among the graduates not to take up manual jobs. There are many supporters of this view in India also and actually the current five year plan to a large extent seems to be based on this philosophy.

Though there cannot be any disagreement on the urgency and need for the agricultural and rural development, the inference drawn therefrom for the expansion of agricultural and vocational courses does not seem to be fully justified and supported by the experience. For example, the implied inference that the type of education to which students are exposed (specially the curriculum of schools) largely determines their vocational aspiration and operates as an independent variable in setting the vocational change is not true but rather fallacious.(1) In India and in many other countries graduates of general academic streams do work with their hands. Conversely, there are equally many instances where professionally and vocationally trained persons have taken up clerical, administrative and executive jobs. It is not actually the white collar vs. the blue collar job which is important in determining the choice of a graduate but the social and institutional milieu in which he works and the status attached to a particular job. If farming is mechanised and acquires social status many graduates will take it up as has been the case in dry-cleaning against traditional washing. Thus no amount of curriculum juggling is likely to produce the kind of results anticipated by the proponents of agricultural, vocational and technical education. The experience of basic education should be still fresh in our minds.

The vocational aspirations of youths and the occupations which they enter are generally determined by factors that lie outside the educational institutions. Vocational instructions in agriculture by themselves cannot induce youth to take up farming unless an institutional complex is created that makes farming easy, profitable, meaningful and socially respectable. The mere transfer of pupils from general academic to vocational courses is not the right solution. In the ultimate analysis education has to improve the quality of life of man both at his job and in his home. Let education not turn out its graduates as cheap labourers to be wantonly engaged in unrewarding physical labour wasting their time and energy. The children of peasants and workers should not be deprived to learn science and culture. Further schools and colleges are obliged to provide education demanded by parents and students as perceived by them. The actual performance of the labour market confirms the fact that students' perceptions have been remarkably realistic. The student in the remote village when he hears the urban occupation success story is bound to take up that education only. It is only a paradox that government has not adequately taken cognizance of the individual's decision making ability in the choice of occupation and related education. Education can only be combined with modern productive work.

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(1) Philip J. Foster, The vocational school fallacy in development planning - Education and Economic Development, edited by C. Arnold, Anderson and Mary Jean Bowman - Aldine Publishing Company, Chicago.

CHAPTER III

LABOUR FORCE CHARACTERISTICS

1. Demographic perspective

The demographic perspective for the current decade underlines the enormity of the task before the country. The population of India has grown from about 250 million in 1921 to 548 million in 1971 and is expected to be around 634 million as of March 1978(1). On the basis of current growth rate it is expected that India's population will cross the mark of 700 million by 1984 and again within the next four years it may touch to 750 million. In spite of such large population coupled with high growth rate the country has been able to make significant improvements in raising the educational standard of the general masses. For example in 1961, 76 per cent of India's population was illiterate, 15% just literate but had no educational level, another 7% had primary but below matric education and only 2.3 per cent had matric and above qualifications. Today these figures have changed quite substantially. For example, the illiteracy percentage has come down to 65 and matric and above educated persons form about 5.8 per cent. However, the higher educated persons still constitute about 1.0 to 1.2 per cent of the total population. How the educational levels of population will change during the next five years can be seen from Table III.1. The proportion of graduates will rise to 1.3 per cent from 1.0 per cent in 1978. The illiteracy percentage will be somewhere between 50 to 57.5 depending upon the success achieved in enrolling the students at the primary stage and in the national adult education programme.

Table III.2 presents the percentage distribution of population by educational attainment in selected countries around the year 1971. The age group referred to is 25 years and above. The table clearly brings out the fact that except Indonesia, India has less post-secondary educated persons among the countries for which data are given. Although there has been a rapid increase in the enrolment at all stages, its impact on raising the educational content of the population (25 years and above) has been only marginal as can be seen from the following data pertaining to 1961 and 1971:

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(1) Draft Five Year Plan - 1978-83, Govt. of India Planning Commission.

Table III.1. Population of India in 1978 and 1983 by educational levels. (Numbers in millions)

	1978		1983					
			ASSUMED GROWTH IN LITERACY					
			1.5 points per annum		2 points per annum		3 points per annum	
Population Category	Number	%	Number	%	Number	%	Number	%
1	2	3	4	5	6	7	8	9
Total population (x)	634.20	100.0	697.20	100.0	697.20	100.0	697.20	100.0
Illiterate	412.23	65.0	400.89	57.5	383.46	55.0	348.60	50.0
Literate	221.97	35.0	296.31	42.5	313.74	45.0	348.60	50.0
(a) Literate but non matriculates	185.06	29.2	244.27	35.0	261.70	37.5	296.56	42.5
(b) Matriculates/Higher Secondary	29.06	4.6	41.06	5.9	41.06	5.9	41.06	5.9
(c) Non technical certificate/diploma holders (not equal to degree)	0.76	0.1	1.08	0.1	1.08	0.1	1.08	0.1
(d) Technical certificate/diploma holders (not equal to degree)	0.64	0.1	0.90	0.1	0.90	0.1	0.90	0.1
(e) Graduates	6.45	1.0	9.00	1.3	9.00	1.3	9.00	1.3
Total of (c) (d) and (e)	7.85	1.2	10.98	1.6	10.98	1.6	10.98	1.6

(x) Expert Committee estimates.

Notes: (1) The literacy percentage increased by 5 points during the decade 1961-71 and during the period 1971-74 also it increased by 0.5 percentage point per annum. The estimate for 1974-78 is that it would have grown by 1 percentage point every year so that literacy rate in 1978 should rise to 35 per cent.

(2) Projections of graduates are based on the base period stock estimates and on assumed rates of institutional outturn and attrition due to retirement, death and migration. These exercises have been done by the Planning Commission for different categories of graduates.

(3) For matriculates, the 1971 Census figure has been taken as the base figure. The annual outturn assumed is based on the trend during 1956-70. The attrition rate assumed 50.8 per cent per annum. The stock of diploma/certificate holders is estimated on the assumption that ratio of this stock to the stock of matriculates remains the same as in the Census of 1971.

(4) The stock of non-matriculate literates is computed by deducting from the literate population the stock of categories (b) (c) (d) and (e).

Source: Draft Five-Year Plan 1978-83, Planning Commission, Govt. of India, New Delhi.

Table III.2. Percentage distribution of population by educational attainment in selected countries

Country	Reference year	Age Group	Highest level attained					
				First level		Second level		
			No-Schooling	Incompleted	Completed	First Cycle	Second cycle	Post-Secondary
1	2	3	4	5	6	7	8	9
Canada	1970	25 +	1.7	47.2	→	51.0	→	→
United States of America	1970	25 +	5.5	→	22.8	50.6	→	21.1
Argentina	1970	25 +	8.3	41.8	30.6	7.8	7.5	4.0
Brazil	1970	25 +	42.6	26.7	19.4	5.9	3.7	2.0
Chile	1970	25 +	13.1	38.6	22.4	22.2	→	3.8
India	1971	25 +	72.2	22.7	→	3.9	→	1.1
Indonesia	1971	25 +	55.3	22.1	17.0	5.1	→	0.5
Japan	1970	25 +	0.9	60.6	→	33.0	→	5.5
Republic of Korea	1970	25 +	72.6	→	→	21.8	→	5.6
Philippines	1970	25 +	19.8	56.4	→	14.2	→	9.6
Sri Lanka	1971	25 +	29.5	23.5	35.4	→	9.4	2.3
France	1968	15 +	45.2	→	39.7	12.4	→	2.7
German Democratic Republic	1971	25 +	49.1	→	→	42.4	→	8.5
Germany (Federal Republic of)	1970	25 +	77.7	→	→	→	18.0	4.3
Italy	1971	25 +	7.3	23.7	48.9	17.5	→	2.6
Poland	1970	25 +	5.2	25.5	43.2	20.7	→	5.4
Yugoslavia	1971	25 +	23.9	38.4	18.5	15.3	→	3.9
Australia	1971	15 +	0.8	7.5	23.3	68.3	→	→
USSR	1970	25 +	48.4	→	→	44.4	→	7.2

Note: The figure immediately to the left of the arrow includes data relative to the columns where this symbol is indicated.

Source: Statistical Year Book, Unesco, 1976.

Educational Level.	1971(%)	1961(%)	Change
(a) No schooling	72.2	75.5	- 3.3
(b) Primary but below secondary	27.7	22.0	+ 0.7
(c) Secondary and above	5.1	2.5	+ 2.6
	100.0	100.0	

2. Labour force and work force

Changes in the labour force are affected by the growth rates of population but after a gap of 15 years. As India's population has been increasing in the past, its labour force has also increased. The original figure of labour force in 1971 as reported by the Census count was 183.66 million which was revised by the Census resurvey to 200.60 million. Both these figures left out millions of rural women workless due to the adoption of definition of "worker" which included only main and primary workers. The Planning Commission has adjusted the census figures and they are now comparable to the figures of earlier censuses. The adjusted figure of the labour force arrived at by the Planning Commission comes to 230.5 million. Of this the work force was 226.9 million and the unemployed 3.6 million(1).

Table III.3 presents the actual labour force data for 1971 and 1978 and also data and the projected labour force for the next 10 years. While the labour force grew at the rate of about five million per year during the 7-year period of 1971-78 the likely growth during the next 10 years will be about 6 million a year. Thus during the next 5 years the labour force will increase by 30 million and again in the next five years it will increase by another 30 million between 1983 and 1988. As far as the additions to labour force in rural and urban areas are concerned about 40 million of the additional 60 million labour force will be in the rural sector.

How has the work force in India grown and what has been its relative distribution among the various industrial sectors is presented in Table III.4. The data in the table relate to a 50-year period from 1921 to 1971. They show that the relative shares of the labour force of the three main sectors of the economy have more or less remained unchanged during the long period of 50 years. Agriculture including forestry, fishing and animal husbandry still claims about three fourths of the total labour force - actually in comparison to 1921, it has 0.7 per cent point of more labour force in 1971. The share of manufacturing sector has improved just marginally by 0.8 points from 9.0

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(1) Based on the 1972-73 National Sample Survey Rates.

Table III.3. Labour force in India by sex and rural/urban location 1971-1988 (In millions)

Year	Rural			Urban			All-India		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
1	2	3	4	5	6	7	8	9	10
1971	124.2	68.3	192.5	30.9	7.1	38.0	155.1	75.4	230.5
1978[(1)]	140.3	77.9	218.2	38.1	9.0	47.1	178.4	86.9	265.3
1983[(1)]	154.1	85.7	239.8	44.4	10.6	55.0	198.5	96.3	294.8
1988[(1)]	167.3	93.4	260.7	51.4	12.3	63.7	218.7	105.7	324.4

(1) Estimated.

N.B. The labour force for 1971 has been estimated by the Planning Commission revising the 1971 Census data as it was an underestimate and nto comparable with the 1961 data.

Source: Draft Five-Year Plan 1978-83, Planning Commission, Government of India, New Delhi.

Table III.4. Distribution of works force in 1921-71

Census year	Agriculture*		Mining & Manufacturing		Others		Total	
	Number (Million)	Percentage	Number (Million)	Percentage	Number (Million)	Percentage	Number (Million)	Percentage
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1971	167.33	73.8	22.37	9.8	37.17	16.4	226.87	100.0
1961	137.80	73.0	19.61	10.4	31.26	16.6	188.67	100.0
1951	101.92	72.8	13.02	9.3	25.06	17.9	140.00	100.0
1941	89.54	74.0	11.13	9.2	20.33	16.8	121.00	100.0
1931	89.23	72.0	10.79	8.7	23.93	19.3	124.00	100.0
1921	87.72	73.1	10.80	9.0	21.48	17.9	120.00	100.0

Sources : 1. Census of India, 1961, Monograph No. 4 p. 25, for 1921 to 1951.

2. Census of India, 1961—General Economic Tables—Part II B (i), for 1961.

3. For 1971, the figures are estimated by Employment & Manpower Planning Division, Planning Commission.

* Including animal husbandry, fishery and forestry work force.

per cent in 1921 to 9.8 per cent in 1971. On the other hand the share of the tertiary sector has declined from 17.9 per cent in 1921 to 16.4 per cent in 1971. As this is the most important sector to employ educated persons, a decline in its relative share is bound to be viewed with unhappiness among the university graduates.

Really it is historically an unique fact that over the last 50-year period, in spite of impressive development of the large scale manufacturing and infrastructure sectors , the share of agriculture in the work force has not diminished at all. In almost all countries economic development is associated with a significant decrease in the work force engaged in agriculture. The change is noticeable even during a shorter period of one or two decades. For example, during the decade 1965-75, out of the 14 Asian countries for which data are given in Table III.5, the share declined in 13 countries. It is only Burma where the share of working force engaged in agriculture has gone up to 69 per cent in 1975 from 67 per cent in 1965. In other countries listed in the table the share has declined between 4 to 13 per cent points. The maximum decline of 13 per cent points is reported by the People's Republic of China which is bigger than India not only in area but in population.

Tables III.6, III.7 and III.8 are based on the original data collected by the 1971 census according to the definition of "workers" adopted by it at the time of collection of data. These tables provide information on (a) industry occupation matrix, (b) educational levels of working force engaged in rural and urban areas separately for male and female working force and (c) the proportion of graduates and technically qualified persons in the total working force. All the information is based on the 1971 census count and relates to the situation as it prevailed in February-March 1971.

As per Table III.6 it is clear that the majority of professional, executive, clerical and sales workers is concentrated in the industrial divisions of (i) services (ii) trade and commerce and (iii) manufacturing. The primary sector of the economy which consists of activities like farming, fishing, forestry, livestock, mining and quarrying, does not claim more then one per cent of the professional, administrative, executive, managerial, clerical and sales workers although its share in the total working force is as high as 75 per cent. It is, therefore, clear that to have any doubt on the problem of educated unemployment, great emphasis will have to be placed on the growth of the tertiary and secondary sectors of the economy or alternatively the primary sector will have to be largely and quickly modernised.

Table III.5. Share of agriculture in the labour force in selected Asian countries

Country	1965 %	1975 %	Change
1	2	3	4
Afghanistan	84	79	- 5
Bangladesh	73	67	- 6
Burma	67	69	+ 2
Cambodia	80	73	- 7
China	42	29	-13
Indonesia	72	67	- 5
Korea (Republic of)	62	54	- 8
Laos	81	74	- 7
Malaysia	60	52	- 8
Nepal	94	89	- 5
Pakistan	73	67	- 6
Philippines	59	54	- 5
Sri Lanka	54	50	- 4
Thailand	81	72	- 9
India			

Source: Asian Agriculture Survey, 1976.

Table III.6. Percentage distribution of working force of India in each industrial category by occupational divisions, 1971 (Unadjusted census data)

Occupational Division Industrial categories	0 - 1 Professional technical and related workers	2 Administrative executive and managerial workers	3 Clerical and related workers	4 Sales workers	5 Service workers	6 Farmers, fishermen hunters, loggers and related workers	7 - 8 - 9 Production and related workers transport equipment workers	10 Workers not classified - else - where by occupation	Total workers Percentage	Total workers number (000's)
1	2	3	4	5	6	7	8	9	10	11
I-II. Cultivators and agricultural labourers	-	-	-	-	-	96.8	-	-	70.1	125 710
III. Livestock, forestry, fishing, hunting and plantations, orchards and allied activities	1.0	0.1	1.4	1.0	0.8	3.0	0.3	0.5	0.2	4 233
IV. Mining and quarrying	0.2	0.5	0.7	-	0.4	-	3.3	0.4	0.5	857
V. Manufacturing, processing, servicing and repairs	4.0	15.7	10.5	2.8	3.4	0.1	64.5	17.9	9.4	16 923
VI. Construction	1.3	8.4	1.8	-	1.2	-	7.7	1.3	1.2	2 169
VII. Trade and commerce	4.2	29.7	16.1	95.3	17.8	-	1.8	2.9	5.6	10 063
VIII. Transport, storage and communication	1.0	3.0	19.5	0.2	2.4	-	11.4	4.5	2.2	4 031
IX. Other services	88.3	42.6	50.0	0.7	74.1	0.1	11.0	72.5	8.6	15 338
TOTAL Percentage	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
TOTAL Number	4 762	1 211	5 296	7 515	5 655	129 848	23 703	1 354	179 344	179 344

Source: 1971 Census of India. All India Census Tables (estimates from 1 per cent sample data), Registrar general of India, New Delhi.

The salient features revealed by Table III.7 may be summarised as follows: (a) the distribution of graduates among rural and urban areas is just in the reverse order of the distribution of the total working force in these two sectors. For example, whereas 82 per cent of the total working force was engaged in rural areas, only 24 per cent of the total graduates were working there; (b) graduates and above female workers were still more heavily concentrated in the urban areas; (c) there was only one female graduate and above workers for every 10 graduates and above qualified male worker; (d) the graduate and above qualified workers constituted only 1.3(1) per cent of the total working force - this ratio for the rural areas being as low as 0.4(1) per cent.

Table III.8 shows the distribution of graduates and technical certificate and diploma holding workers among the various industrial divisions of the 1971 census. In the total working force of 179.3 million, the number of such qualified persons was only 2.6 million which formed about 1.5 per cent of the total working force. Although agriculture, forestry, fishing and animal husbandry claimed a paltry share of 5.2 per cent of the total higher educated persons (most of whom were self employed), their proportion in the total working force of these sectors was really negligible i.e. only 0.017 per cent. As will be expected the maximum number of such persons was absorbed by the service sector which claimed 60 per cent of them (and most of these persons were having wage employment). The other two sectors "trade and commerce" and "manufacturing, processing and servicing" claimed 15.2 and 11.8 per cent of the higher educated persons respectively.

The 1971 census also canvassed a special slip to collect detailed data from the university degree holders and technical personnel regarding their education and activity status, sectors of employment, monthly emoluments, waiting period, etc. Table III.9 to III.13 presented here, contains some of this data. All the persons did not return the information and as such response rates may vary from category to category and also for different items of information. Nevertheless, the number of respondents being quite large, the conclusions drawn on the basis of percentage distributions are likely to represent the actualities. The reader, however, is advised to keep these limitations of data in mind while interpreting the results. Only three sets

(1) These percentages will go down to 1.0 and 0.3 respectively on the basis of revised estimates of working force as arrived at by the Planning Commission. The Planning Commission estimated the total working force in 1971 as 226.9 million of which 190.9 million was in rural areas.

Table III.7. Working force of India by educational levels, rural/urban and sex, 1971 (Unadjusted census data)

Educational levels	Total			Rural			Urban		
	Persons	Male	Female	Persons	Male	Female	Persons	Male	Female
1	2	3	4	5	6	7	8	9	10
A. Total working force in (000's)	179 344	148 346	30 996	147 504	119 791	27 711	31 840	28 555	3 285
(a) Total (percentage)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
(b) Illiterate	64.0	58.7	89.4	70.1	65.0	92.2	35.4	32.0	65.9
(c) Literate without any educational level	10.7	12.2	3.4	10.7	12.4	3.2	10.8	11.5	5.0
(d) Primary	12.0	13.8	3.4	11.0	12.8	3.0	17.2	18.4	6.4
(e) Middle	6.7	7.9	1.3	5.1	6.1	0.9	14.2	15.3	4.5
(f) Matriculation or higher secondary	5.0	5.7	1.6	2.6	3.0	0.5	16.1	16.7	11.3
(g) Non technical diploma or certificate not equal to degree	0.1	0.1	-	-	0.1	-	0.2	0.2	0.2
(h) Technical certificate or diploma not equal to degree	0.2	0.2	0.2	0.1	0.1	0.1	0.5	0.5	0.8
(i) Graduates and above	1.3	1.4	0.7	0.4	0.5	0.1	5.6	5.5	5.9
(i) Graduates degree other than technical degree							3.4	3.4	2.7
(ii) Post-graduate degree other than technical degree							1.1	1.1	1.5
(iii) Technical degree or diploma equal to degree							1.1	1.0	1.7
- Engineering and technology							0.4	0.5	-
- Medicine							0.3	0.2	0.5
- Agriculture, veterinary and dairying							-	-	-
- Teaching							0.3	0.2	1.2
- Other							-	-	-

Notes:
(i) Does not include data for the State of Sikkim.
(ii) Estimated from one percent sample data.
(iii) Totals may not add to 100 due to rounding off.

Source: 1971 Census of India, Economic characteristics of population (selected tables) series 1 - India, Paper 3 of 1972, Registrar general of India, New Delhi.

Table III.8. Proportion of graduates and technical persons in the working force by industrial category, 1971 (unadjusted census data)

Industrial category	Total workers (in 000's)	Workers with graduate degree or technical qualifications (000's)		Column 3 as % of column 2
1	2	3		4
Cultivators	78 367	112	4.2 %	0.143
Agricultural labourers	47 343	6	0.2 %	0.013
Livestock, forestry, fishing, hunting, plantation orchards and allied activities	4 233	26	1.0 %	0.614
Mining and quarrying	857	16	0.6 %	1.867
Manufacturing, processing, servicing and repairs (household and non household)	16 923	313	11.8 %	1.850
Construction	2 169	61	2.3 %	2.812
Trade and commerce	10 063	405	15.2 %	4.025
Transport, storage and communication	4 031	125	4.7 %	3.101
Other services	15 358	1 601	60.1 %	10.425
TOTAL	179 344	2 663	100.0%	1.485

Source: The 1971 Census of India, Economic Characteristics of Population (selected tables) Series I, India, Paper No.3 of 1972, Registrar General of India, New Delhi.

of data are presented here. They relate to (a) the activity status, (b) sectors of employment and (c) monthly emoluments. The main findings of the data on these items are given below:

(a) Activity status of degree holders and technical personnel

There are two Tables III.9 and III.10 on the activity status of the degree holders and technical personnel. Table III.9 reveals:

(i) The unemployment rate among the degree holders and technical personnel was as high as 12 per cent. Women had one and a half times higher incidence of unemployment as 19.5 per cent of them reported as unemployed. This is against the common feeling that women have a comparative advantage in obtaining a job.

(ii) The incidence of unemployment decreases with the improvement in educational qualifications. For example only 9.0 per cent postgraduates reported themselves unemployed as against about 14 per cent graduates and undergraduates. When these percentages are converted into absolute numbers, the gap becomes still obvious.

(iii) About 7 per cent of the degree holders and technical personnel were found self employed irrespective of their educational level(1). Self employment among the females formed only 2 per cent except among the undergraduate females for whom this percentage was as high as 7.9 per cent and marginally higher than the percentage for their counterpart males.

(iv) Persons not trying for jobs consisted mostly of women. This is a unique social-cultural feature of the Indian society. Many girls receive higher education in India not for employment sake but to improve their matrimonial prospects. There is no limit to this and it may go to even Ph. D. level. This is very clearly brought out by the fact that as high a percentage as 17.9 of total female post-graduates were not trying for any job. The percentage for the males was only 0.8.

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(1) The data have been reclassified here and grouped in three broad educational levels. "Post-graduate" level includes research and "undergraduate" level represents diploma and certificate holder.

Table III.9. Percentage distribution of degree holders and technical personnel by status and level of education, 1971

Status	Post-graduate			Graduate			Undergraduate			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
1	2	3	4	5	6	7	8	9	10	11	12	13
A. Labour force	91.8	68.8	87.4	84.8	53.9	78.5	91.2	80.1	90.6	86.9	57.7	81.5
(a) Employee	77.3	48.6	71.8	62.8	32.0	56.5	71.1	55.0	70.2	66.7	36.1	61.0
(b) Self employed	7.7	2.0	6.6	9.0	1.9	7.6	7.0	7.9	7.0	8.5	2.1	7.3
Working force	85.0	50.6	78.4	71.8	33.9	64.1	78.1	62.9	77.2	75.2	38.2	68.3
(c) Unemployed and trying for job	6.8	18.2	9.0	13.0	20.0	14.4	13.1	17.2	13.4	11.7	19.5	13.2
B. Not in labour force	3.4	23.3	7.2	8.8	36.4	14.4	3.8	12.8	4.2	7.2	33.0	12.0
(a) Students	2.6	5.4	3.1	7.4	12.6	8.5	3.0	3.5	3.0	6.0	10.9	6.9
(b) Unemployed but not trying for job	0.8	17.9	4.1	1.4	23.8	5.9	0.8	9.3	1.2	1.2	22.1	5.1
C. Retired	2.4	0.5	2.0	2.7	0.4	2.3	2.7	1.9	2.7	2.6	0.5	2.2
D. Unspecified	2.4	7.3	3.4	3.7	9.3	4.8	2.3	5.2	2.5	3.3	8.8	4.3
E. Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number total (000's)	366	86	452	1 221	311	1 532	194	12	206	1 781	409	2 190

Source: 1971 Census, Registrar General of India, New Delhi.

Table III.10. Percentage distribution of graduated and technical personnel in each subject field of education by status, 1971

	STATUS											
	In labour force					Not in labour force						
	Working force											
Subject field 1	Employee 2	Self-employed 3	Total 4	Unemployed and trying for job 5	Total 6	Students 7	Unemployed but not trying for job 8	Total 9	Retired 10	Unspecified 11	Total Percentage 12	Number 13
Arts/Humanities	59.0	7.2	66.2	12.8	79.0	5.9	7.3	13.2	2.5	5.4	100.0	1 139 589
Science	57.4	4.8	62.2	16.2	78.4	11.4	4.7	16.1	2.0	3.5	100.0	450 357
Commerce	62.9	10.2	73.9	13.8	87.7	6.6	1.5	8.1	0.6	4.4	100.0	171 921
Agriculture	74.1	3.0	77.1	11.2	88.3	5.5	1.1	6.6	2.0	3.2	100.0	39 627
Vet. science	84.1	3.4	87.5	5.3	92.8	2.1	0.4	2.5	3.5	1.3	100.0	11 009
Engineering	74.6	4.6	79.2	12.5	91.7	4.2	0.7	4.9	2.0	1.3	100.0	249 598
Medicine (Allopathy)	54.8	23.5	78.3	4.1	82.4	10.1	0.9	11.0	4.7	2.0	100.0	68 297
Medicine (others)	38.9	40.5	79.4	5.8	85.2	2.6	2.1	4.7	3.2	6.8	100.0	22 795
Nursing	83.5	2.7	86.2	3.5	89.7	2.5	3.9	6.4	1.1	2.6	100.0	3 787
Vocational education	66.3	3.7	70.0	20.4	90.4	3.2	1.3	4.5	0.8	4.3	100.0	19 594
Others	67.7	7.9	75.6	9.0	84.6	3.1	4.5	7.6	2.4	5.4	100.0	13 558
All categories	60.9	7.3	68.2	13.2	81.4	6.9	5.1	12.0	2.3	4.3	100.0	2 190 232

Source: 1971 Census, Registrar general of India, New Delhi.

What was the activity status of degree holders and technical personnel by their subject of study or field of specialisation? This information is given in Table III.10. The interesting findings of the the table are: (i) that a higher percentage of persons with nursing, veterinary science, agriculture or engineering and technology qualifications were working as employees; (ii) that a very high percentage of persons with qualifications in medicine was self employed; (iii) that as many as 20 per cent of the vocationally educated persons reported themselves as unemployed and trying for jobs. This shows that diversification of education to vocational courses has not improved the employment prospects of these people. It has, on the other hand, worsened it. The other subject fields where high rates of unemployed persons may be noted were arts, science, commerce, engineering and agriculture. The percentage of unemployed persons in these subject fields varied from 11.2 in the case of agriculture to 16.2 in the case of science; and (iv) and that the highest percentage of persons not trying for jobs (and also the highest number in absolute terms) belonged to arts and humanities.

(b) Sections of employment of degree holders and technical personnel

The data presented in Table III.11 relate to the category of "employees" of the degree holders and technical personnel recorded by the 1971 Census. The information is with reference to the current employment (not first employment) as found out at the time of the census count. The points worth noting in Table III.11 are that about one third of the total employees was engaged in teaching activity of the national educational system itself. As will be expected, persons with higher education had a better chance to be employed as teachers. Thus among the doctorate and postgraduate degree holding employees, half were teachers. Employees in the industry formed 11.3 per cent of which 7.0 per cent were claimed by the private sector industries. There was not much difference in the educational profile of the employees of the public and private sectors of the industry. The distribution of employees by their educational qualifications in the two sectors was more or less in the same proportion as their total employment. The services (of which the government is the largest employer) claimed as high a share of total employees as 58 per cent.

(c) Emoluments of the degree holders and technical personnel

The next two tables provide information on the monthly emoluments of the degree holders and technical personnel. Table III.12 presents the percentage distribution of these persons in the (a) public, (b) private

Table III.11. Percentage distribution of employed (other than self employed) degree holders and other technical Personnel by type of organisation of present employment classified by level of Education, 1971

Type of organisation 1	Total 2	Doctorate 3	Master/ Post Graduate 4	Bachelor/ Equivalent 5	Diploma 6	Certificate 7	Unspecified 8
Teaching Organisations	31.9	53.5	45.7	31.1	5.6	9.8	13.5
I. University	4.7	48.5	12.1	1.9	1.1	1.2	2.0
II. Polytechnics	0.5	0.2	0.3	0.3	2.2	1.5	0.5
III. Schools	26.7	4.8	33.1	28.8	2.2	7.0	11.0
IV. Private Coaching	0.1	-	0.2	0.1	0.1	0.1	-
Industry	11.3	5.2	6.3	11.5	22.0	26.9	18.2
I. Public Sector	4.3	1.5	2.1	4.4	9.5	10.7	3.7
II. Private Sector	7.0	3.7	4.2	7.1	12.5	16.2	14.5
Natural Resources organisations	0.6	0.4	0.6	0.5	1.6	1.2	1.0
Social Developmental organisations	1.6	0.4	1.2	1.8	1.6	1.7	3.5
Other governmental organisations	43.2	14.2	28.3	46.3	60.4	48.5	47.5
Other organisations	11.3	26.3	18.1	8.9	8.9	12.1	16.5
All organisations	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number (in 000's)	1,294.1	14.4	299.5	838.0	121.7	20.1	0.4

Source: 1971 Census, Registrar General of India, New Delhi.

Table III.12. Percentage distribution of degree holders and technical personnel by monthly emoluments level of education and sex, 1971

Monthly emoluments (in Rs.)	Doctorate		Master/Post-Graduate		Bachelor/Equivalent		Diploma		Certificate		Total	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
1	2	3	4	5	6	7	8	9	10	11	12	13
Less than Rs. 100	-	-	0.2	0.5	0.4	1.0	0.3	1.1	1.1	1.6	0.3	0.9
Rs. 100 - Rs. 499	7.0	13.8	42.7	52.0	51.9	68.4	56.6	67.5	53.2	65.5	49.9	63.4
Rs. 500 - Rs.999	43.0	50.0	30.1	26.9	20.5	9.9	22.3	8.5	18.1	7.1	23.0	14.6
Rs.1000 - Rs.1999	32.5	16.7	7.5	2.8	5.0	0.9	3.2	0.9	4.6	1.1	5.7	1.6
Rs.2000 +	4.5	1.3	1.6	0.3	0.9	0.1	0.6	0.1	1.4	0.2	1.1	0.2
Unspecified	13.0	18.2	17.9	17.5	21.3	19.7	17.0	21.9	21.6	24.5	20.0	19.2
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: Totals may not add to 100 due to rounding of figures.

Source: 1971 Census, Registrar General of India, New Delhi.

and (c) self employed sectors. There is a substantial percentage of persons who have not supplied information regarding their monthly emoluments (this is also true for Table III.13) specially the information for the self-employed sector is virtually completely missing. It is, therefore, proposed not to analyse this sector. Regarding the other two sectors, viz, public and private, the following two observations will be found in order. Firstly, the male employees have a better salary structure as compared to the female employees. This fact was true for both the public and private sectors. A possible explanation [illegible] it may be that the entry of educated females in the labour market is comparatively of recent origin and thereby most of them might have not yet reached the highest échelons of their career. It may also be partly explained by the fact that the educational profile of the female workers is itself not as rich as that of the male workers. Secondly, it is noted that on an average the employee in the private sector is less (marginally) paid, but there is a bright side to this and it is that in the highest salary brackets proportionately more persons are employed in the private sector than in the public sector.

3. Employment characteristics of a cohort of graduates

So far information has been analysed regarding the characteristics of the total stock of higher educated persons. Now it is proposed to provide some similar information for a cohort of university graduates. This analysis of the cohort is based on the data collected by the Directorate General of Employment and Training (DGE&T) with reference to 1968 graduates in all subjects and the diploma holders in engineering. The DGE&T collected the data in 1972 and published the report in 1976. To maintain comparability with the stock analysis presented in the above paragraphs, the information on the cohort of graduates will be analysed in terms of items like their activity status, area of work, industrial, occupational and sectoral distributions and their classification by emoluments received. The entire information given in this section will be in relation to the degree/diploma obtained in 1968 and not the last degree obtained if any.

(i) Activity status of the graduates:

As far as the activity status of graduates/diploma holders is concerned, it is startling to note that even after five years only two thirds of them were employed. The percentage of students and those not seeking any work was only about 7. The survey data show that as many as 31.6 per cent of

Table III.13. Percentage distribution of degree holders and technical personnel by monthly emoluments, sector of employment and sex, 1971

Monthly emoluments (in Rs.)	Public sector		Private sector		Self-employed		Total	
	Male	Female	Male	Female	Male	Female	Male	Female
1	2	3	4	5	6	7	8	9
Less than Rs. 100	0.3	0.4	0.6	1.7	0.1	0.2	0.3	0.9
Rs. 100 - Rs. 499	56.3	65.5	52.2	68.5	7.0	7.0	49.9	63.4
Rs. 500 - Rs. 999	26.5	18.0	22.0	11.2	4.3	4.1	23.0	14.6
Rs. 1000 - Rs. 1999	5.7	1.8	7.3	1.1	2.0	1.8	5.7	1.6
Rs. 2000 +	0.6	0.1	2.4	0.2	1.0	0.5	1.1	0.2
Unspecified	10.7	14.2	15.5	17.2	85.5	86.4	20.0	19.2
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note : Totals may not add to 100 due to rounding off the figures.

Source: 1971 Census, Registrar general of India, New Delhi.

university graduates and 26.6 per cent of diploma holders in engineering were unemployed. However, the percentage of employed persons was over 90 in the case of doctorates and postgraduates in engineering, medicine and education. The lowest percentage of the employed persons among all postgraduates was for postgraduates in Arts. Their percentage of employed persons was only 70. It is shocking to note that the graduates with honours had the least employment. They were more unemployed than employed. The two percentages being 45.2 and 44.1 respectively. The first degree holders in arts, science and commerce also had severe incidence of unemployment as 34 per cent to 46 per cent of them were unemployed. However, over 80 per cent of the graduates in engineering, medicine and education were employed. It is likely that a large proportion of the unemployed graduates might have re-enrolled for further education subsequently. Detailed information on activity status of graduates is given in Table III.14. Self-employment including family enterprise employment accounted for about six per cent of the total graduates. Degree in medicine (graduate) as well as postgraduate seems to be the most suitable education for being self-employed after the category of other graduates which seems to consist of mostly law graduates. It should not however, be construed that becoming self-employed is a very easy proposition and one can start his or her self employment immediately after graduation. Only 38 per cent of the self-employed graduates/diploma holders reported that they started their own enterprise within six months of obtaining their degree. Another 13 per cent took six months to one year to have done so. The remaining half took more than one year and actually eight per cent took as long a time as four years.

(ii) Place of work: In the context of unemployment and also in the context of developmental strategy the graduates have been subject to two criticisms namely (1) that they do not go to take up jobs in rural areas and (2) that they do not move out of their place of residence. The survey data

Table III.14. Distribution of graduates by activity status

Field/Degree	Activity Status										Total
	Full time paid employment	Part-time paid employment	Self-employment	Family enterprise	Total employed	Unemployed	Student	Not seeking work	Not specified	Total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1. Doctorates	87·5	1·3	2·5	..	91·3	6·2	2·5	..	..	100·0	80
2. Post-graduates—											
(a) Arts	65·6	1·0	2·6	0·9	70·1	24·6	3·3	1·7	0·[illegible]	100·0	5,216
(b) Science	72·6	0·5	1·6	1·3	76·0	14·9	8·3	0·7	0·1	100·0	1,746
(c) Commerce	73·0	1·0	6·7	3·4	84·1	14·0	1·7	..	0·2	100·0	582
(d) Engineering	89·8	..	1·1	..	90·9	4·0	5·1	..	..	100·0	177
(e) Medicine	73·9	..	17·4	..	91·3	7·2	1·5	..	..	100·0	69
(f) Agriculture	76·1	0·5	1·0	0·5	78·1	17·0	4·4	0·5	..	100·0	905
(g) Education	88·4	2·0	..	0·7	91·1	6·2	2·0	0·7	..	100·0	146
(h) Others	80·0	..	8·0	1·0	89·0	6·0	5·0	..	..	100·0	100
3. Honours Graduates ..	40·1	0·7	2·4	0·9	44·1	45·2	9·0	1·6	0·1	100·0	2,371
4. Graduates—											
(a) Arts	41·1	1·2	2·4	1·0	45·7	45·5	6·5	2·3	..	100·0	7,106
(b) Science	45·6	1·1	2·3	1·7	50·7	36·8	11·1	1·4	..	100·0	4,230
(c) Commerce	48·6	1·0	5·2	4·8	59·6	33·6	6·7	0·1	..	100·0	1,900
(d) Engineering	80·8	0·1	4·9	1·7	87·5	8·4	3·9	0·2	..	100·0	2,512
(e) Medicine	67·3	0·9	13·4	0·3	81·9	7·3	10·1	0·6	0·1	100·0	701
(f) Agriculture	61·1	0·9	1·8	0·3	64·1	30·0	5·7	0·2	..	100·0	1,718
(g) Education	80·0	0·3	0·4	0·1	80·8	17·0	1·1	1·0	0·1	100·0	5,321
(h) Others	54·1	0·7	26·9	1·8	83·5	13·6	2·2	0·5	0·2	100·0	1,801
All Graduates	54·0	0·9	4·5	1·4	60·8	31·6	6·2	1·4	..	100·0	35,981
5. Diploma holders in engg./tech.	63·2	0·4	4·2	1·3	69·1	26·6	4·0	0·2	0·1	100·0	18,701

Source: Report on the Employment Pattern of Graduates, Directorate General of Employment and Training, Ministry of Labour, New Delhi, 1976.

presented in Table III.15 throws some light on these two issues in respect of those graduates who were in paid employment. The table brings out the following points:

- Less than 10 per cent of the graduates and less than 20 per cent diploma holders were working outside their own state. The percentages of such persons working in the rural villages were 5.2 and 1.9 respectively.
- On an average most postgraduates were working in states other than their own states than did the graduates. However more graduates were working in villages than did the postgraduates.
- As far as graduates in professional and technical subjects vs. graduates in general academic subjects are concerned, the data in the table indicate that barring education, professionally qualified graduates were relatively in larger number in states other than their own state. And this was true for both the graduates and postgraduates in professional subjects. However, regarding the working in villages, one notices the reverse trend i.e. more persons with arts, science and commerce qualifications were in villages than persons with professional qualifications.

(iii) Industrial classification:

The distribution of paid employees by the industry in which they were employed is given in Table III.16. The information has been classified with reference to the time of the survey i.e. 1972. The table shows that practically all the Doctorates were employed in services - educational and scientific services themselves claimed for more than three fourths of the total doctorates. The bulk of the employed postgraduates in arts and science and practically all the graduates and postgraduates in education were in the educational and scientific services. Employed graduates with commerce qualifications were spread over mostly in trade and commerce, education, public services, and manufacturing. The important employing sectors for the engineering graduates/postgraduates and diploma holders were education, public services and manufacturing. While medical and health services, educational and scientific services,

Table III.15. Percentage distribution of graduates in paid employment working in other than their own State or in village

Field/Degree	Working in other States	Working in villages	Total number working
Doctorate	16.9	-	71
Post-graduates :			
(a) Arts	5.0	5.0	3,472
(b) Science	10.3	2.0	1,275
(c) Commerce	10.6	2.1	386
(d) Engineering	27.7	-	159
(e) Medicine	9.8	-	51
(f) Agriculture	12.7	2.5	157
(g) Education	3.0	2.3	132
(h) Others	8.8	1.2	80
Honours Graduates	6.1	4.1	968
Graduates :			
(a) Arts	4.8	7.7	3,089
(b) Science	7.0	3.9	2,100
(c) Commerce	4.5	3.5	991
(d) Engineering	22.6	1.0	2,031
(e) Medicine	11.6	3.3	478
(f) Agriculture	9.1	4.7	1,066
(g) Education	3.3	10.1	4,266
(h) Others	5.2	2.7	988
All categories of graduates	7.1	5.2	21,760
Diploma in Engineering	18.6	1.9	1,190

Source: Report on the Employment Pattern of graduates, Directorate general of employment and training, New Delhi, August, 1976.

Table III.16. Distribution of graduates in paid-employment classified by industry in which currently engaged

Field/ Degree	Industry in which engaged						
	Agriculture forestry etc.	Mining and quarrying	Manufacturing	Construction	Electricity, gas, water sanitary service	Trade and Commerce	Transport and communication
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Doctorates	..	..	1·4	..	..	..	..
2. Post-graduates—							
(a) Arts	0·4	0·1	1·7	0·1	0·4	4·9	1·4
(b) Science	0·8	0·6	3·6	..	0·1	2·6	2·7
(c) Commerce	0·8	0·2	7·5	..	1·3	26·9	2·3
(d) Engineering	..	..	13·8	1 9	0 6	1.3	..
(e) Medicine	..	..	3.9	..	..	..	2·0
(f) Agriculture	4·5	..	3.2	..	..	5·1	1·9
(g) Education	..	..	..	..	..	0·7	..
(h) Others	..	..	10.0	..	..	2·5	..
3. Honours Graduates	1·2	0.4	5·6	..	0·5	13·5	2·6
4. Graduates—							
(a) Arts	0.8	0.2	2.6	0·4	0·9	7·5	2·6
(b) Science	0.9	0.1	8·7	0·1	0·9	13·0	1·9
(c) Commerce	1·0	..	9.6	0·8	1.1	29·4	3·8
(d) Engineering	0 8	0 9	21·9	7·9	6·3	1·2	2·8
(e) Medicine	..	..	3·6	0·2	0·2	0·4	0·2
(f) Agriculture	3·9	0·2	4·6	0·3	0·6	8·0	2·0
(g) Education	0·1	0 1	0·2	..	0·1	0·4	0·2
(h) Others	1·0	0·2	5·8	0·1	0·6	13·0	3·4
All Graduates	0·8	0·2	5·5	0·8	1·0	8·3	2·0
5. Diploma holders in engineering/ technology	1·2	0·6	16·1	5·6	7·6	1·7	4·0

Source: Report on the Employment Pattern of Graduates, Directorate General of Employment and Training, Ministry of Labour, New Delhi, 1976

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Table III.16 (continued)

Field/Degree	Industry in which engaged				Not Classified	Total	Total paid employees
	Public Services	Educational & Scientific	Medical Health	Others			
(1)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1. Doctorates	5·6	77·5	9·9	1·4	4·2	100·0	71
2. Post-graduates—							
(a) Arts	13·8	71·0	..	2·6	3·6	100·0	3,472
(b) Science	9·4	76·7	1·0	1·3	1·2	100·0	1,275
(c) Commerce	23·1	29·3	..	4·7	3·9	100·0	308
(d) Engineering	17·0	48·4	..	10·1	6·3	100·0	159
(e) Medicine	5·9	37·2	49·0	2·0	..	100·0	51
(f) Agriculture	38·8	43·3	1·3	0·6	1·3	100·0	157
(g) Education	2·3	93·2	..	..	3·8	100·0	132
(h) Others	23·8	37·5	12·5	6·2	7·5	100·0	80
3. Honours Graduates	16·9	49·1	..	5·9	4·3	100·0	968
4. Graduates—							
(a) Arts	22·0	54·1	1·1	2·9	4·9	100·0	3,000
(b) Science	14·2	51·8	1·3	1·9	5·2	100·0	2,100
(c) Commerce	25·3	13·5	0·9	6·1	8·5	100·0	991
(d) Engineering	28·0	9·8	..	12·2	8·2	100·0	2,031
(e) Medicine	5·0	12·2	75·3	0·4	2·5	100·0	478
(f) Agriculture	53·0	21·3	0·7	1·2	4·2	100·0	1,006
(g) Education	2·6	93·2	0·3	0·4	2·4	100·0	4,306
(h) Others	32·6	17·0	14·2	6·7	5·4	100·0	988
All Graduates	18·1	50·0	4·9	3·6	4·8	100·0	21,760
5. Diploma holders in engineering/ technology	36·8	6·0	0·5	8·3	11·6	100·0	1,190

and public services had 92 per cent of the total employed graduates and postgraduates in Medicine, the internal distribution in these three sectors was quite different. For example, 75 per cent of the employed medical graduates were in medical and health services, only 49 per cent of the total employed postgraduates in medicine were in this sector. Similarly the ratios in the educational and scientific sectors were quite different for the two levels of medical graduates, less than five per cent of the total employed graduates/postgraduates in agriculture were employed in agriculture, forestry, etc. Details regarding the industrial distribution of other graduates may be seen from Table III.16. The relation between education and occupation is analysed in the next section.

(iv) Sector of employment:

Only two sectors of employment have been analysed here viz. public sector which represents central government, state government, local bodies and quasi government establishments and the private sector. (About 5 to 6 per cent graduates did not indicate the sector of their employment both when they took the first employment and at the time of their current employment. These cases have been included under the private sector). As many as 72.0 per cent of all categories of graduates and 65.1 per cent of engineering diploma holders in paid employment, secured their first employment in the public sector. At the time of the survey in 1972 these percentages had improved to 73.2 and 69.4 respectively, indicating a slight tendency to shift from private to public sector over the time. However, all categories of graduates did not behave this way. Among the doctorates there was a shift from the public to the private sector of the order of 5.6 per cent points. Similarly postgraduates in medicine, education and other fields shifted to private sector. There was a net shift from private to public sector among the graduates, honours graduates and diploma holders in engineering. The distribution of graduates in the two sectors along with the change from private to public and vice versa can be seen from Table III.17. The (+) signs in column 6, indicates a net shift from public to private sector and the (-) signs a net shift from private to public sector in the individual category.

Table III.17. Distribution of graduates and diploma holders (in engineering) in paid employment by sector of employment in first and current employment and the change in public sector employment from 1st to current employment

Level/Subject	First employment		Current employment		Change in public employment from 1st to current
	Public	Private(1)	Public	Private(1)	
1	2	3	4	5	6
Doctorate	78.9	21.1	73.3	26.7	+ 5.6
Post-graduates:					
(a) Arts	72.9	27.1	73.6	26.4	- 0.7
(b) Science	67.4	32.6	69.7	30.3	- 2.3
(c) Commerce	73.0	27.0	74.9	25.1	- 1.9
(d) Engineering	60.4	39.6	65.4	34.6	- 5.0
(e) Medicine	90.2	9.8	86.2	13.8	+ 4.0
(f) Agriculture	83.4	16.6	91.1	8.9	- 7.7
(g) Education	68.9	31.1	67.4	32.6	+ 1.5
(h) Others	76.2	23.8	71.3	28.7	+ 4.9
Honours graduates	67.0	33.0	68.9	31.1	- 1.9
Graduates:					
(a) Arts	75.9	24.1	76.4	23.6	- 0.5
(b) Science	65.8	34.2	77.1	22.9	- 11.3
(c) Commerce	66.2	33.8	69.1	30.9	- 2.9
(d) Engineering	59.7	40.3	63.5	36.5	- 3.8
(e) Medicine	81.5	18.5	82.0	18.0	- 0.5
(f) Agriculture	84.7	15.3	87.2	12.8	- 2.5
(g) Education	73.4	26.6	74.0	26.0	- 0.6
(h) Others	78.9	21.1	80.0	20.0	- 1.1
All graduates and post graduates	72.0	28.0	73.2	26.8	- 1.2
Diploma holders in engineering	65.1	34.9	69.4	30.6	- 4.4

(1) About 5 to 6 per cent "not classified" employment data have been included under the private sector employment.

Source: Report on the Employment pattern of graduates, DGENT, Ministry of Labour, New Delhi, 1976.

(v) Occupational distribution:

As can be deduced from the fact that about half of the employed graduates were engaged in the educational and scientific sector of the economy, they were working as teachers at different levels in various types of institutions. Another 23 per cent each of the total employed graduates were working as "professional, technical, administrative, managerial, etc." and "clerical" workers. The doctorates were practically employed as teachers or professional and technical workers. It is disquietening to note that about eight per cent of employed diploma holders in engineering were engaged in clerical jobs and another 19.0 per cent as crafstmen. The occupational distribution of graduates and diploma holders in engineering is given in Table III.18. Further details regarding some important occupations taken up by the graduates at the time of the first employment have been given and analysed under the heading "occupation-education matrix".

(vi) Monthly emoluments:

The distribution of graduates and diploma holders in engineering in paid employment by monthly emoluments in their first employment is presented in Table III.19. The data indicate that one out of ten employed graduate/diploma holder accepted a job with less than Rupees 200(1) per month. This percentage for jobs with Rs. 1000/. and above was only 2.1 for graduates (all categories) and 0.3 for diploma holders. Only doctorates and postgraduates in professional subjects could get jobs drawing a monthly pay of Rs. 1000/. and above in some significant number. The data of the table also confirms the fact that (1) higher the educational qualification, better are the pay scales , and (2) graduates in professional subjects are able to secure better paid jobs.

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(1) One Rupee = 0.12 $US.

Table III.18. Distribution of graduates in paid employment classified by broad occupational groups in first employment

Field/Degree	Occupation in first employment										Total paid employees
	Teachers	Other professional technical	Administrative managerial	Clerical	Sales	Service	Agriculture	Craftsmen	Not classified	Total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1. **Doctorates**	66·2	28·2	1·4	..	1·4	..	..	..	2·8	100·0	71
2. **Post-graduates**—											
(*a*) Arts	68·9	7·5	1·8	16·8	0·7	0·4	0·1	0·4	3·4	100·0	3,472
(*b*) Science	73·2	18·5	0·9	4·2	0·7	..	0·2	0·6	1·7	100·0	1,275
(*c*) Commerce	27·2	19·4	3·4	44·5	1·5	0·3	0·3	0·3	3·1	100·0	386
(*d*) Engineering	44·0	49·1	1·9	..	0·6	..	0·6	0·6	3·2	100·0	159
(*e*) Medicine	41·1	54·9	2·0	..	..	..	..	..	2·0	100·0	51
(*f*) Agriculture	22·3	53·5	4·4	6·4	3·2	..	7·0	1·9	1·3	100·0	157
(*g*) Education	86·4	1·5	3·0	5·3	..	..	..	..	3·8	100·0	132
(*h*) Others	21·3	51·3	6·2	11·2	3·8	..	2·5	2·5	1·2	100·0	80
3. **Honours graduates**	48·9	15·6	2·9	26·0	1·8	0·6	0·3	0·8	3·1	100·0	968
4. **Graduates**—											
(*a*) Arts	53·4	6·2	1·5	31·7	0·9	1·0	0·2	1·1	4·0	100·0	3,089
(*b*) Science	53·0	16·7	1·6	21·7	2·5	0·2	0·2	2·1	2·0	100·0	2,100
(*c*) Commerce	10·6	14·4	2·4	66·9	1·3	0·3	0·3	1·1	2·7	100·0	901
(*d*) Engineering	7·5	75·6	4·6	3·1	1·5	..	0·1	4·3	3·3	100·0	2,031
(*e*) Medicine	11·9	84·5	1·1	..	0·6	..	..	..	1·9	100·0	478
(*f*) Agriculture	16·5	42·6	3·4	15·5	5·7	0·4	11·4	0·9	3·6	100·0	1,066
(*g*) Education	93·2	1·4	0·4	2·8	0·1	0·1	..	..	2·0	100·0	4,266
(*h*) Others	12·6	32·1	6·1	39·1	0·9	1·1	0·4	1·3	6·4	100·0	988
All Graduates	49·1	19·7	2·1	22·6	1·2	0·5	0·4	1·2	3·2	100·0	21,760
5. **Diploma holders in engineering/technology**	3·6	57·3	1·7	7·7	4·3	0·2	0·4	19·0	5·8	100·0	1,190

Source: Report on the Employment Pattern of Graduates, Directorate General of Employment and Training, Ministry of Labour, New Delhi, 1976.

Table III.19. Distribution of graduates in paid-employment classified by emoluments in first employment

Field/Degree	Monthly emoluments in first employment (Rs.)									Total paid employees
	Less than 200	200—299	300—399	400—499	500—749	750—999	1000 or more	Not classified	Total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. Doctorates	1·4	1·4	1·4	2·8	36·6	22·6	21·1	12·7	100·0	71
2. Post-graduates—										
(a) Arts	11·0	19·2	24·0	14·7	14·3	2·5	0·7	13·6	100·0	3,472
(b) Science	4·5	12·7	16·7	22·7	32·4	4·3	0·7	6·0	100·0	1,275
(c) Commerce	10·4	17·6	21·0	16·1	21·2	5·4	3·9	4·4	100·0	386
(d) Engineering	..	..	1·3	9·4	42·1	25·2	16·4	5·6	100·0	159
(e) Medicine	..	..	2·0	9·8	25·5	29·4	23·5	9·8	100·0	51
(f) Agriculture	3·8	10·8	17·8	28·7	22·3	9·6	1·9	5·1	100·0	157
(g) Others	2·5	2·5	3·8	17·5	37·5	15·0	11·2	10·0	100·0	80
(h) Education	4·5	9·1	13·6	19·7	29·6	6·1	3·0	14·4	100·0	132
3. Honours Graduates	9·0	19·0	27·2	17·1	14·3	3·9	1·3	8·2	100·0	968
4. Graduates—										
(a) Arts	20·0	25·4	23·3	9·4	5·7	0·9	0·6	14·7	100·0	3,089
(b) Science	12·8	26·7	24·1	15·1	11·0	1·1	1·2	8·0	100·0	2,100
(c) Commerce	15·2	22·6	23·9	14·2	12·1	1·5	1·1	9·4	100·0	991
(d) Engineering	2·0	8·0	10·9	17·5	36·8	12·4	6·6	5·8	100·0	2,031
(e) Medicine	2·5	7·7	7·7	10·1	42·7	16·9	4·2	8·2	100·0	478
(f) Agriculture	10·0	25·3	19·3	19·8	14·4	3·4	0·6	7·2	100·0	1,966
(g) Education	9·8	18·4	32·8	17·8	7·7	0·9	0·2	12·4	100·0	4,266
(h) Others	6·7	11·2	17·4	18·9	24·5	5·3	3·9	12·1	100·0	988
All Graduates	11·6	19·2	21·8	14·6	15·6	3·8	2·1	11·3	100·0	21,760
5. Diploma holders in engineering technology	19·4	25·9	23·5	12·9	8·4	0·9	0·3	8·7	100·0	1,190

Source: Report on the Employment Pattern of Graduates, Directorate General of Employment and Training, Ministry of Labour, New Delhi, 1976.

4. The higher educated unemployed

The 1971 Census under its special enumeration of graduates and technical personnel found out that 13.2 per cent of such personnel were unemployed and looking for jobs. The incidence of unemployment was more among the graduates of arts, science and commerce and also among the persons with agriculture and vocational educational educational qualifications. These statistics have already been furnished in Table III.10 for the various subject fields. Besides the 1971 Census data, the follow up survey of the DGE&T also provided some information on unemployment among the university graduates of 1968. According to that survey the unemployment rate among the university graduates was as high as 31.6 per cent and among the diploma holders in engineering as 26.6 per cent. Besides these rates of unemployment among the the higher educated persons, the Census, the DGE&T and the NSS studies also indicate the high and unduly long waiting period the graduates have to undergo before they secure first employment. All these studies being ad hoc, however, do not provide any indication of the trend for the magnitude of unemployment over the period. Some idea about this aspect can be had from the data compiled by the DGE&T. On the basis of applicants on the Live Register of its Employment Exchanges which are spread throughout the country. It is proposed to analyse these data here and see whether unemployment among graduates is increasing or decreasing.

Before the actual analysis is presented, it will be useful to point out certain limitations from which the data on the Live Register of the Employment Exchanges suffer. Firstly, the registration on the Live Register is not complete. As it is voluntary all the people do not register. Secondly, the Employment Exchanges provide facility to employed people also to register themselves for improving their employment career prospects and as these are not kept separate, the number on Live Register gets inflated. Further there have been some cases (of late very few) of multiple registration also. Many of the applicants registered with the Employment Exchanges do not get their name struck out when they obtain employment through means other then the Employment Exchanges. Similarly, many people do not get their registration renewed after six months when it automatically gets expired. The cumulative net effect of all this is difficult to quantify but it is the general feeling that these factors cancel out one another and the data as recorded on the Live Register to indicate the magnitude of the problem and in any case they are fair enough to show the trend.

Table III.20 presents the distribution of educated persons on the Live Register of the Employment Exchanges in India by education fields and levels. The data show that the number of unemployed people (matriculates and above) has increased from 1.1 million in 1967 to about 4.8 million over eight years in 1975. If the matriculates are excluded the increase in the number of unemployed higher educated persons is of a very high magnitude. There were only about 0.27 million unemployed/higher educated persons in 1967 but this figure has gone up to 2.16 million in 1975 - an eightfold increase in eight years. The increase in the number of unemployed persons is a universal fact for all type graduates and postgraduates (except the postgraduates in veterinary science). Whereas the postgraduates and undergraduates have recorded a fivefold increase in the number of unemployed persons, the graduates have recorded an eightfold increase. In the total higher educated persons of the order of 2.16 million the relative shares of undergraduates, graduates and postgraduates were 57 per cent, 40 per cent and three per cent respectively.

As far as various subjects of study are concerned the concentration of unemployment was, as should be expected, highest among the arts, science, commerce and education both at the graduate and the postgraduate levels. Postgraduates in veterinary science education seem virtually as having no unemployment problems, but it seems that the graduates in veterinary science did not have a very comfortable position though it is so believed. Quite a few hundreds of them have been recorded as unemployed as per the Live Register dates.

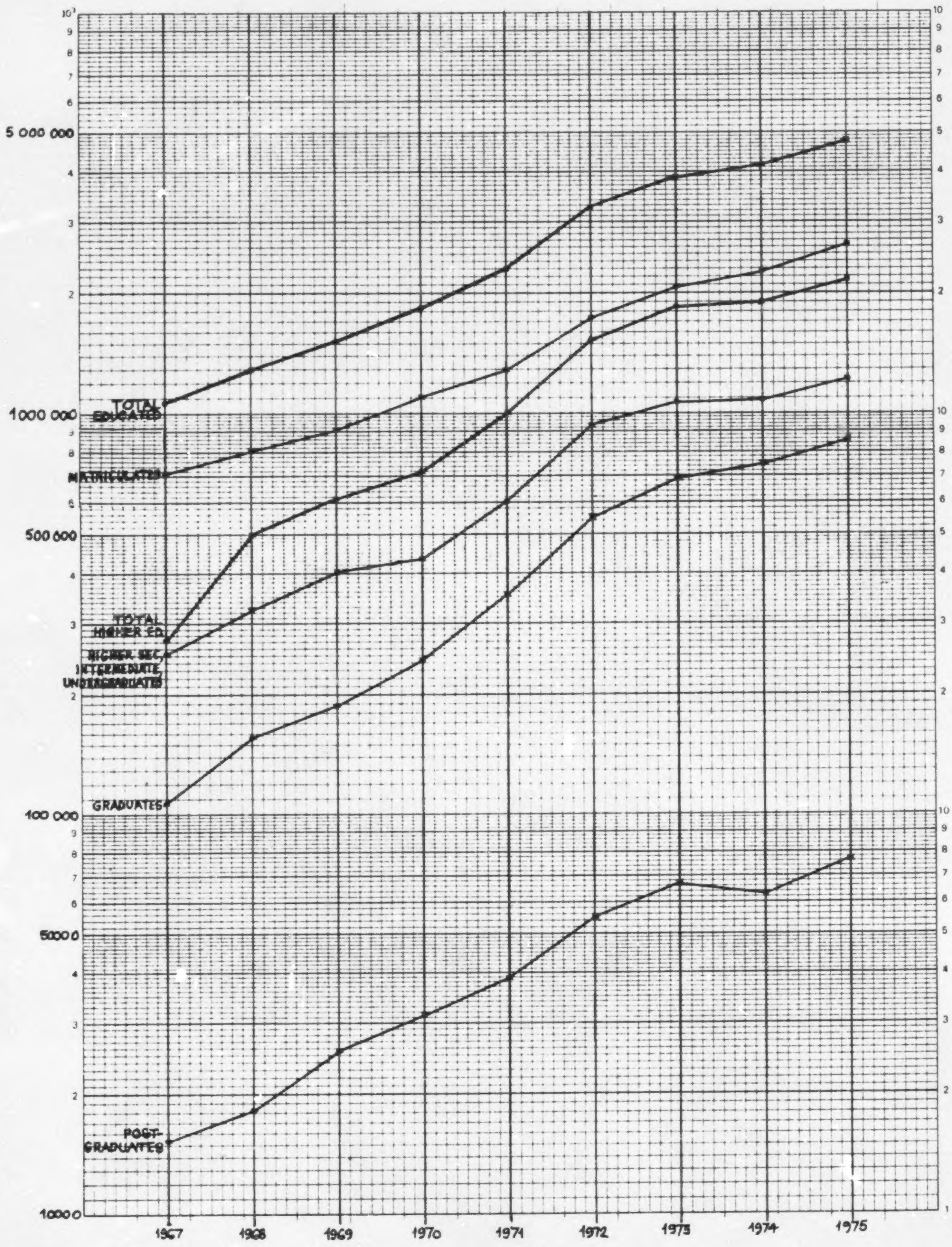
A better idea of the graveness of the situation of unemployment among the higher educated persons can be had if the number of persons with such qualifications on the Live Register is expressed as a percentage of the annual outturn of each category. This analysis is presented in Table III.21 for four years, for which data could be available. It is observed that the number of graduates in art science, commerce, engineering, agriculture and of late in education, and the postgraduates in science and education registered with the Employment Exchange has been more then 100 per cent of their annual outturn during the period 1971-74. This means that if educational facilities in these subjects are suspended for some time, there will be no dearth of graduates as this could be supplied by the backlog registered with the Employment Exchange. These percentages further indicate the fact that the waiting period for most of the subject fields is going to be more than one year. The data on the Live Register are really alarming in so far as the magnitude of the problem of unemployment among the higher educated people is concerned and also in so far as the deterioration in the situation over the time is concerned. They call for immediate steps to solve the problem.

Table III.20. Distribution of educated applicants on live register of employment exchanges in India by education fields and level

Education/field level	1967	1968	1969	1970	1971	1972	1973	1974	1975
1	2	3	4	5	6	7	8	9	10
Matriculates	714 148	809 631	909 686	1 101 194	1 296 801	1 735 451	2 074 001	2 278 624	2 641 213
Higher secondary/intermediate/ undergraduate	251 744	324 319	401 326	443 884	605 222	935 458	1 071 757	1 086 581	1 228 147
Graduates (Total)	106 101	157 221	189 512	245 076	354 460	548 377	688 968	745 059	858 676
(a) Arts	47 321	68 073	79 902	95 359	147 038	227 152	290 856	319 200	372 448
(b) Science	23 116	34 690	46 762	68 155	99 189	160 844	210 716	215 098	237 607
(c) Commerce	17 115	22 827	26 284	35 355	52 177	79 083	94 957	114 315	130 185
(d) Engineering	6 599	10 657	12 836	16 215	18 646	22 466	22 730	19 092	16 978
(e) Medical	1 085	896	1 529	2 431	3 848	5 127	5 664	6 682	7 301
(f) Veterinary	-	-	170	355	361	200	371	276	511
(g) Agriculture	2 580	3 583	5 113	6 611	7 325	9 092	8 913	7 370	7 958
(h) Law	568	884	892	1 434	1 611	2 641	2 457	2 082	2 639
(i) Education	5 114	11 937	15 051	17 741	22 683	36 009	44 629	56 564	73 987
(j) Others	2 603	3 674	973	1 420	1 582	5 763	7 675	5 380	9 060
Post-graduates (Total)	15 378	18 169	25 726	31 462	39 081	54 896	66 921	63 470	77 192
(a) Arts	7 804	10 103	12 133	15 062	18 792	27 683	34 424	34 810	44 606
(b) Science	2 548	3 236	5 261	7 570	10 114	13 642	16 036	17 565	19 374
(c) Commerce	1 225	1 414	2 116	2 407	2 902	4 054	5 137	5 383	6 646
(d) Engineering	352	369	265	251	404	342	363	252	338
(e) Medical	70	109	68	66	105	128	184	238	422
(f) Veterinary	-	-	2	10	31	7	19	110	4
(g) Agriculture	264	417	533	542	682	810	959	676	887
(h) Law	115	108	169	141	197	206	127	194	145
(i) Education	1 954	1 828	4 624	3 844	4 704	6 027	8 323	2 303	2 684
(j) Others	1 046	585	555	1 569	1 150	1 997	1 449	1 939	2 086
TOTAL Higher educated (2 + 3 + 4)	273 223	499 709	616 564	720 422	998 763	1 538 731	1 827 546	1 896 130	2 164 015
TOTAL Educated (1 + 5)	1 087 371	1 309 340	1 526 250	1 821 616	2 295 564	3 274 182	3 901 647	4 174 734	4 805 226

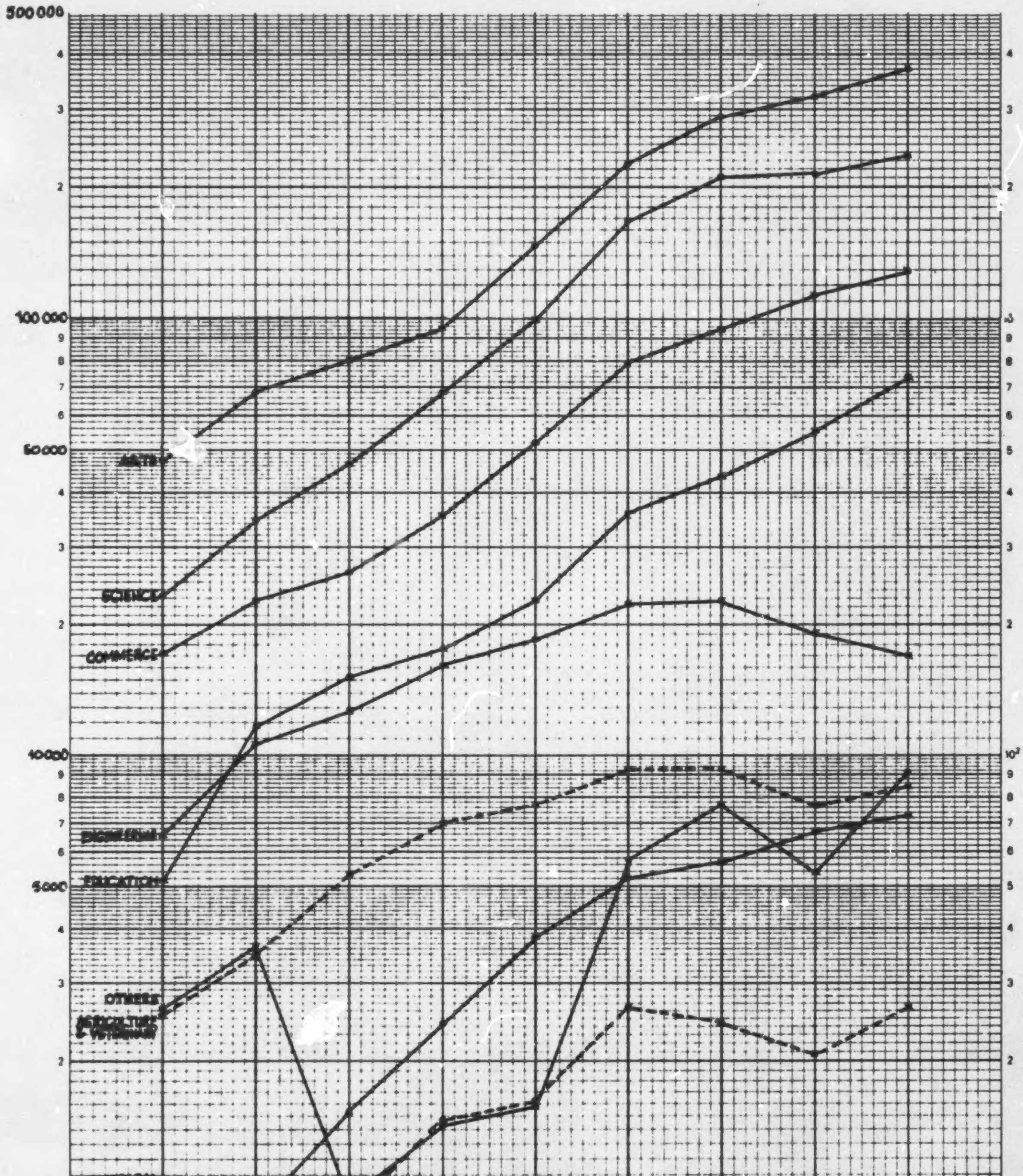
Source: Directorate general of employment and training, Ministry of labour, New Delhi.

GRAPH 3 (a). Distribution of educated applicants on live register of employment exchanges, by level of education

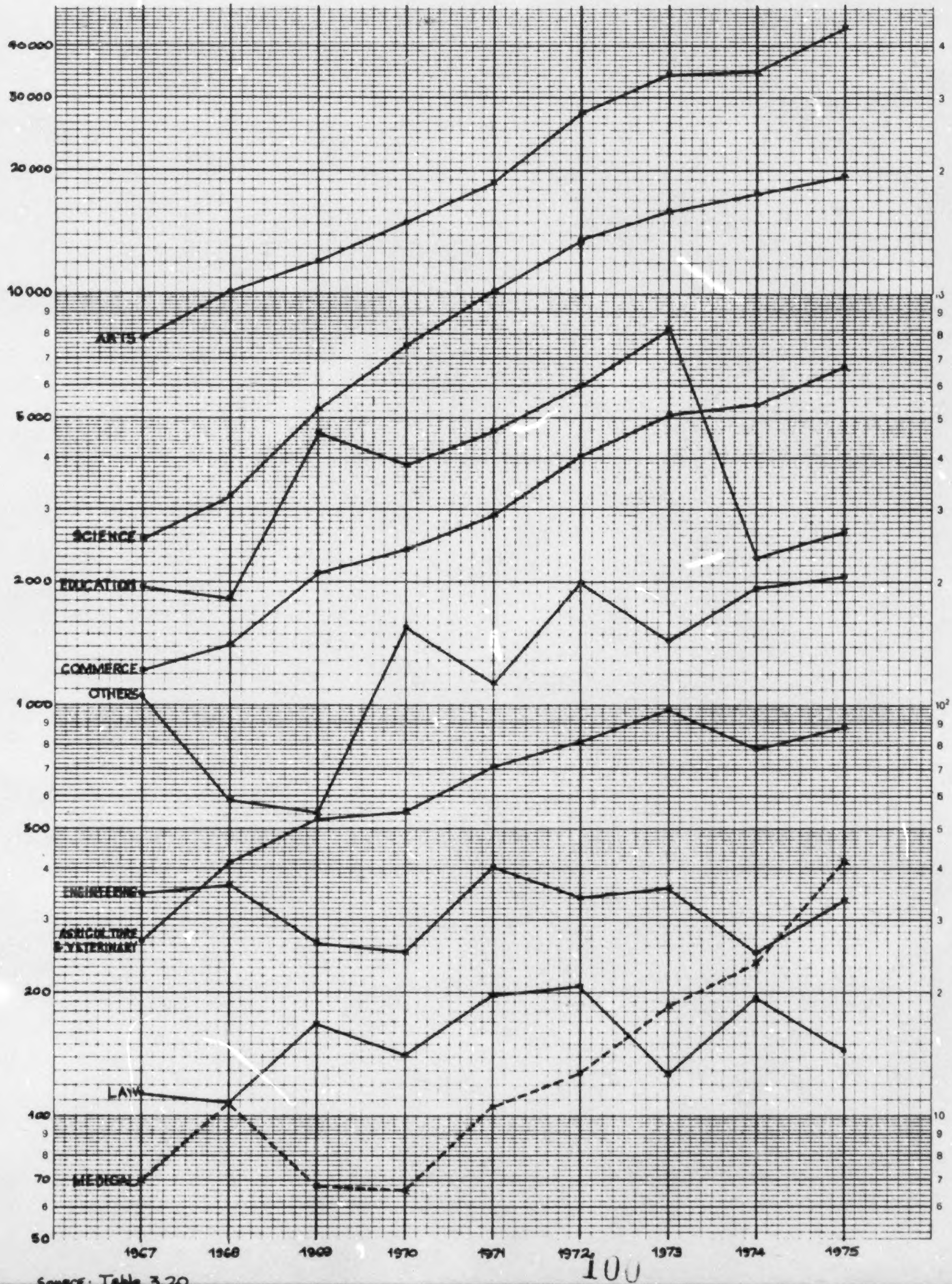


SOURCE: Table 3.20

Graph 3(b). Distribution of graduates on live register of employment exchanges, by educational field



Graph 3(c). Distribution of post-graduates on live register of employment exchanges, by educational field



Source: Table 3.20

Table III.21. **Graduates and Post-graduates persons on live register as percentage of graduate and post-graduate out-turn in respective years by subject, 1971-1974**

Level/Subject	Persons on live register as percentage of output			
	1971	1972	1973	1974
Graduates				
(a) Arts	72.5	106.6	117.3	114.1
(b) Science	97.2	145.4	197.5	176.5
(c) Commerce	112.4	155.6	141.9	137.1
(d) Engineering	94.3	129.8	160.9	141.5
(e) Medicine	41.4	53.3	43.6	49.1
(f) Veterinary Science	35.6	20.2	40.9	27.1
(g) Agriculture	138.7	160.7	188.7	159.9
(h) Law	11.1	16.4	12.6	9.0
(i) Education	47.3	67.7	83.2	92.9
(j) All graduates	77.9	113.9	129.8	123.1
Post-Graduates				
(a) Arts	35.6	50.7	53.2	51.5
(b) Science	65.1	86.1	92.0	102.4
(c) Commerce	50.7	68.5	66.2	55.5
(d) Education	365.8	339.2	518.9	107.3
(e) All Post-graduates	48.5	66.1	68.4	61.3

Waiting period:

Normally there is bound to be a certain number of educated job seekers specially when they are freshly educated manpower cohorts. This number may also go on increasing along with the increase in the annual outturn of educated cohorts. These situations do not cause any alarm. The phenomenon becomes serious only when the number of persons seeking employment - unduly outstrips the annual outturn of graduates and has a tendency to increase year after year. In that case two undesirable things happen. Firstly, the increased number of employment seekers pushes out the less qualified persons from the employment market capturing the jobs meant for them. Secondly, the average waiting period between leaving the portals of the institutions of higher education and settling down to any employment starts becoming unduly long. Ideally all persons of an educated manpower cohort should settle down in employment at different times during the course of one academic year and before the next cohort of educated manpower arrives. Therefore, the ideal average waiting period for any educated manpower cohort should not be more than half year (26 weeks) and in any case not more than one year (52 weeks). If the period is less than 26 weeks it will be very much welcome by the employment seekers and show the strength of the absorptive capacity of the labour market.

Latest information on the waiting period for the higher educated manpower has been taken (and presented here) from three different sources for the graduates employed in around 1972. The three sources and their reference years are: Census of 1971 (1971); National Sample Survey (1972-73); and the Directorate General of Employment and Training (1968 cohort followed up in 1972). The findings of these agencies are reported below separately:

(a) The 1971 Census

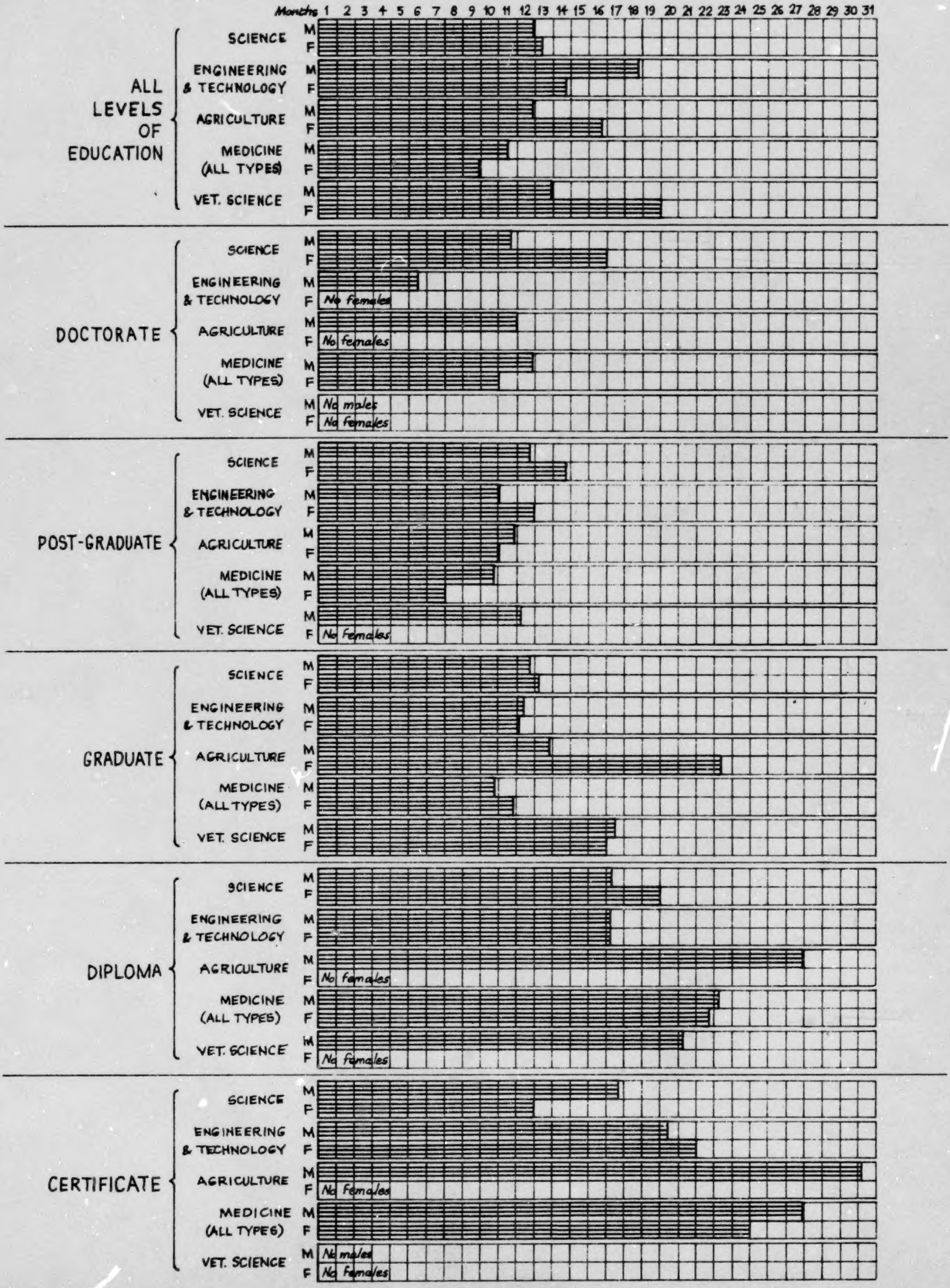
The 1971 Census under its special count of scientific and technical personnel provides information (published as G-series tables) on average (median) duration of unemployment among such persons by subject fields and levels of education. Table III.22 provides the consolidated data for five levels of education and five broad subject fields, separately for male and female graduates. The data show that the duration of unemployment is less as one moves from lower levels of education to higher levels in practically all subject fields. Barring the doctorate degree holders in engineering, no other category of higher educated persons had an average (median) unemployment of less than 10 months. The diploma and certificate holders in most of the subjects had an unemployment period of 16 to 30 months (male) and 12 to 24 months (female).

Table III.22. Average (Median) duration of unemployment among scientific and technical personnel by subject fields and levels of education, 1971 (in months)

Level of education	Science		Engineering and technology		Agriculture		Medicine (all types)		Vet. science	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
1	2	3	4	5	6	7	8	9	10	11
All levels of education	11.9	12.4	17.8	13.8	12.1	15.7	10.5	8.9	12.9	19.0
Doctorate	10.6	16.0	5.5	-	11.0	-	11.8	10.0	-	-
Post-graduate	11.7	13.7	10.0	12.0	10.9	10.0	9.7	7.0	11.0	-
Graduate	11.8	12.2	11.4	11.1	12.9	22.3	9.7	10.8	16.5	16.0
Diploma	16.2	19.0	16.3	16.3	26.9	-	22.2	21.8	20.2	-
Certificate	16.6	12.0	19.4	21.0	30.1	-	26.9	24.0	-	-

Source: Registrar general of India, New Delhi.

GRAPH 4. Average (median) duration of unemployment among scientific and technical personnel



SOURCE: Table 3.22

(b) National Sample Survey

Data based on the 27th Round of NSS conducted in 1972-73 are presented in Table III.23. They indicate the percentage distribution of persons by time since when seeking or available for employment. The data show that no graduates and postgraduates in medicine had a waiting period of more than three months. About 36 per cent of engineering graduates and above, 38 per cent and 57 per cent agricultural graduates in urban and rural areas respectively and 37 per cent and 66 per cent graduates in general education in urban and rural areas respectively had an unemployment period of more than one year. Generally graduates living in rural areas faced higher incidence of unemployment than their counterparts in urban areas. Among the graduates in general education residing in urban areas, women had better chances of getting employment as they reported substantially shorter waiting periods than the male graduates in this category.

(c) Directorate General of Employment & Training Study

While the data collected by the Census 1971 and NSS relate to the total stock of graduates, the study conducted by the DEG&T refers to the waiting period among the graduates of a single cohort of the year 1968. The study was conducted in 1972 so that it could bring out the relationship between education and subsequent employment by allowing sufficient time for graduates to settle down in employment. The DGE&T has analysed the data in greater details. These data are presented in Table III.24. The table shows that seven per cent of all the graduates and 21 per cent of diploma holders in engineering had reported a waiting period of more than two years. Actually 2.3 per cent and 4.0 per cent of them respectively had a waiting period of more than four years. The other findings worth note are: (a) postgraduates have less incidence of unemployment than graduates or diploma holders in most subject fields and (b) graduates in professional courses specially medicine had reported shorter waiting periods than graduates in general education subjects.

Such a high proportion of graduates remaining unemployed over such a long period cannot be interpreted as frictional unemployment. Maybe a very small portion of it is frictional which is bound to be in any society including the ones who have full employment. However, the Indian situation is that the waiting period has not declined over the last few decades and further that it is spreading to technical and professional courses also. All this confirms that the unemployment in India is largely structural in nature and it requires some definite remedial measures. The average waiting period in early 1970s was about a year. During the succeeding period of 1970-78, it should have only increased. This means that more than 3 per cent of the total working life of graduates is spent in waiting without any meaningful economic activity. Further, the age at which this waiting period takes place is very important.

Table III.23. Percentage distribution of persons seeking or available for work by sex, general education and since when seeking or available for work in rural and urban India, 27th round of NSS (octobre 1972 - septembre 1973)

Education category and level			Percentage distribution of persons when seeking or available for employment														
			Upto 3 months			Above 3 and upto six months			Above 6 months and upto one year			More than one year			Total		
			Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Graduates and above in agriculture	(a)	Rural	-	-	-	21.79	-	17.53	31.41	-	25.26	46.80	100.0	57.21	100.0	100.0	100.0
	(b)	Urban	14.68	8.22	12.09	12.84	32.88	20.88	34.86	19.18	28.57	37.62	39.72	38.46	100.0	100.0	100.0
Graduates and above in engineering and technology	(a)	Rural	-	-	-	100.0	-	100.0	-	-	-	-	-	-	100.0	100.0	100.0
	(b)	Urban	25.51	-	25.51	24.49	-	24.49	14.29	-	14.29	35.71	-	35.71	100.0	100.0	100.0
Graduates and above in medicine	(a)	Rural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	(b)	Urban	100.0	100.0	100.0	-	-	-	-	-	-	-	-	-	100.0	100.0	100.0
Graduates and above in other subjects	(a)	Rural	5.22	-	4.70	17.75	-	15.99	10.73	34.55	13.10	66.30	65.45	66.21	100.0	100.0	100.0
	(b)	Urban	13.71	15.76	14.44	15.53	15.94	15.68	25.58	44.75	32.47	45.18	23.55	37.41	100.0	100.0	100.0

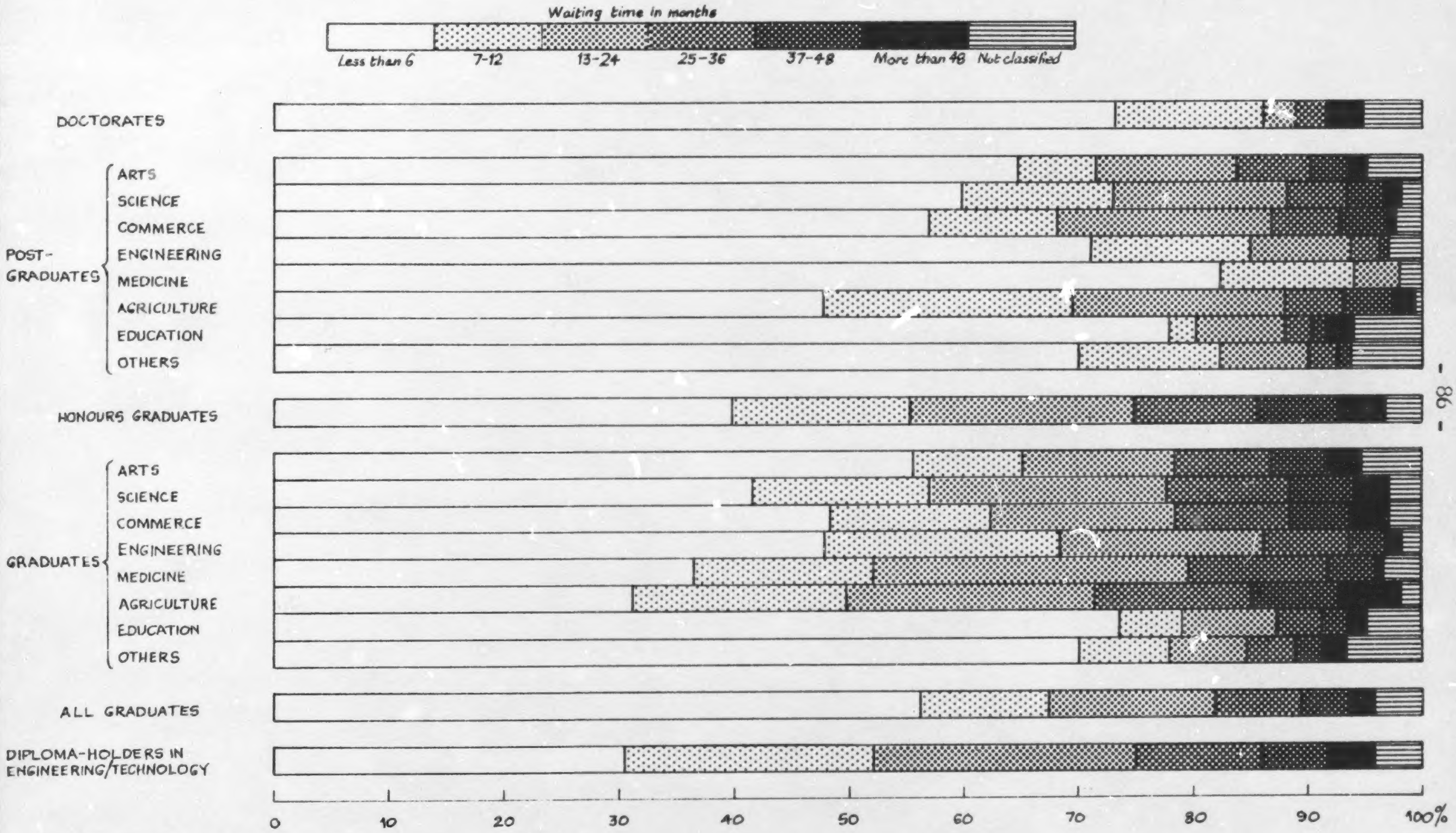
Source: National sample survey ; the survey on employment, Report No. 255/5 (Preliminary and provisional), New Delhi, 1976.

Table III.24. Distribution of graduates according to waiting period in getting first employment(Followup of 1968 Cohort in 1972)

Field/ Degree	Waiting period (Months)							Total	Total in paid employment
	Less than six months	7—12	13—24	25—36	37—48	48 or more	Not classified		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. Doctorates	73·3	12·7	2·8	2·8	..	2·8	5·6	100·0	71
2. Post-graduates—									
(*a*) Arts	64·8	6·7	12·4	6·4	3·3	1·5	4·9	100·0	3,472
(*b*) Science	59·3	13·1	15·2	5·1	3·2	1·7	1·8	100·0	1,275
(*c*) Commerce ..	57·0	11·1	18·6	6·0	4·2	0·8	2·3	100·0	386
(*d*) Engineering ..	71·1	13·9	8·8	2·5	0·6	..	3·1	100·0	159
(*e*) Medicine	82·3	11·8	3·9	..	..	..	2·0	100·0	51
(*f*) Agriculture ..	47·8	21·7	18·5	5·1	4·4	1·9	0·6	100·0	157
(*g*) Education ..	78·0	2·3	7·6	2·3	1·5	2·3	6·0	100·0	132
(*h*) Others	70·0	12·5	7·5	2·5	1·2	..	6·3	100·0	80
3. Honours Graduates ..	39·9	15·4	19·5	10·9	6·9	4·2	3·2	100·0	968
4. Graduates—									
(*a*) Arts	55·6	9·5	13·4	8·3	5·0	2·8	5·4	100·0	3,089
(*b*) Science	41·7	15·2	20·9	10·7	5·5	3·0	3·0	100·0	2,100
(*c*) Commerce ..	48·3	14·0	16·1	10·0	5·1	3·4	3·1	100·0	991
(*d*) Engineering ..	47·9	20·5	17·6	7·4	3·3	1·5	1·8	100·0	2,031
(*e*) Medicine	36·4	15·7	27·4	12·1	4·2	0·6	3·6	100·0	478
(*f*) Agriculture ..	31·1	18·6	21·7	13·6	7·7	5·4	1·9	100·0	1,066
(*g*) Education ..	73·6	5·5	8·1	3·9	2·4	1·6	4·9	100·0	4,266
(*h*) Others	70·1	7·8	6·8	4·3	2·2	2·1	6·7	100·0	988
All graduates	56·2	11·3	14·3	7·5	4·1	2·3	4·3	100·0	21,760
5. Diploma holders in engineering/technology ..	30·5	21·6	22·9	10·8	6·0	4·0	4·2	100·0	1,190

Source: Report on the Pattern of Employment of Graduates, Directorate General of Employment and Training, Ministry of Labour, New Delhi, 1976.

GRAPH 5. Distribution of graduates according to waiting period in getting first employment (percentages)



SOURCE: Table 3.24

CHAPTER IV

EMPLOYMENT AND MANPOWER PLANNING

1. Employment in the organised sector

Nearly all the higher educated persons find jobs in what is called the organised sector of employment. The organised sector of employment consists of usually all public sector units and private establishments employing more than 10 workers. It represents non-agricultural employment(1). Employment in the organised sector is regularly recorded under a variety of legislation e.g. the Factories Act, the Mines Act, the Plantation Labour Act, Motor Worker's Act, Shops and Commercial Establishments Act, Weekly Holidays Act, and also under the Employment Market Information Programme, the Annual Survey of Industries and the routine reporting system of government agencies such as the Railway Board, the Department of Posts and Telegraphs, etc. The Directorate General of Employment and Training has been reporting the employment in the organised sector separately for the public and the private sectors. The Planning Commission choosing the most appropriate source for each industry has brought up-to-date these data for the seven-year period of 1967 to 1974. The revised data are on a higher side than what the DGE&T has published in its publication "Employment Review". There seems an increase of about 16 per cent in the "recorded employment" of the Planning Commission over the employment in the "organised sector" of the DGE&T during the period 1971-1974 for which the two figures could be compared readily.

In 1967-68 the recorded employment was 18.6 million and it rose to 22.5 million in 1974-75. This gives an average annual growth of only 0.55 million which means that the organised sector has been absorbing only about 11 per cent of the current annual increase in the labour force. In other words 89 per cent of the annual increase of the labour force of about 4.45 million had to find jobs elsewhere or remained unemployed. However, in terms of higher educated manpower the organised sector is virtually the only sector to provide them jobs, therefore, the growth in the organised sector is of vital importance for the absorption of higher educated persons.

Within the organised sector the rôle of services, manufacturing industries, trade and commerce and transport, storage and communications is vital. These industry divisions account for more than 80 per cent of the total employment in the organised sector. The services themselves claim about one third of the total employment in the organised sector. On the basis of the DGE&T data it is observed that there has been very insignificant increase in the employment as far as the private sector is concerned. Most of the growth in the organised sector according to the DGE&T data was recorded by the public agencies of the organised sector. The share of the private sector in the total organised employment has fallen from about 39 per cent in 1971 to only 33 per cent in 1977. The distribution of recorded employment as per the Planning Commission) by industry division is presented in Table IV.1.

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(1) It does not cover self employment therefore the situation of self employed doctors and lawyers will not be discussed here.

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Vacancies notified:

The fact that the number of new jobs is getting smaller year after year is also borne out by the statistics on the vacancies notified. Under the Employment Exchange (Compulsory Notification of Vacancies) Act, 1959 it is obligatory for all the employers in the public sector and those employing 25 and more workers in the private sector to notify vacancies in their establisments to Employment Exchanges, subject to certain exemptions. There are many jobs which are outside the purview of the Employment Exchanges, such as those advertised by the Union Public Service Commission or State Public Service Commission for highly professional and technical personnel and these have also a bearing on the number of vacancies open to fresh graduates. Considering the substantial number of freshers available in the labour market for employment, an attempt has been made to collect all relevant data relating to the vacancies open to them (graduates and diploma holders only). These are presented in Table IV.2, which covers not only the vacancies notified Employment Exchanges but also includes those falling within the purview of the Union and the State Public Service Commissions, Railway Service Commission, etc. The data are given for two points of time with an interval of five years.

The data in Table IV.2 show that the total number of vacancies notified in 1974-75 was only 52,050 as against 53,552 in 1969-70 - a fall of about 1,500 or roughly 300 per annum. The fall has been in all the subject specialisations except "teachers" and "others". It is noticed that only about two thirds of the total vacancies notified were open to the fresh graduates. The other one third number of total vacancies notified was meant for those who were or had been in service earlier and, therefore, had some experience. It is only after some time lag that the current vacancies for the experienced persons become available for the freshers but only on lower levels of occupations.

Table IV.1. Recorded employment by industry divisions - 1967-68 to 1973-74

Industry Division	Recorded Employment (in 000's)							
	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75
1	2	3	4	5	6	7	8	9
Plantation, Forestry, etc.	1 219	1 202	1 194	1 127	1 212	1 206	1 209	1 286
Mining and Quarrying	765	739	718	704	685	706	783	834
Manufacturing	4 450	4 420	4 481	4 641	4 804	4 986	5 140	5 294
Construction	989	902	942	948	1 018	1 081	1 193	1 118
Electricity, Gas, etc.	377	372	425	473	500	532	575	619
Trade and Commerce	2 437	2 508	2 609	2 724	2 888	3 069	3 212	3 343
Transport, Storage & Communications	2 369	2 397	2 437	2 458	2 503	2 564	2 611	2 642
Services	6 003	6 117	6 256	6 415	6 604	6 823	7 118	7 349
TOTAL	18 609	18 657	1 962	19 490	20 214	20 967	21 841	22 485

Sources: For tea and coffee plantations, data collected under the Plantation Labour Act.
For rubber, Rubber Board Statistics.
For forestry, Employment Market Information data. Also for coal mining, transport, storage and communications and for services, Employment Market Information.
For mines other than coal, data collected under the Mines Act.
For manufacturing and electricity, Annual Survey of Industries.
For Railways, Railway Board Statistics.
For Post and Telegraphs, data from the Director General of Posts and Telegraphs.

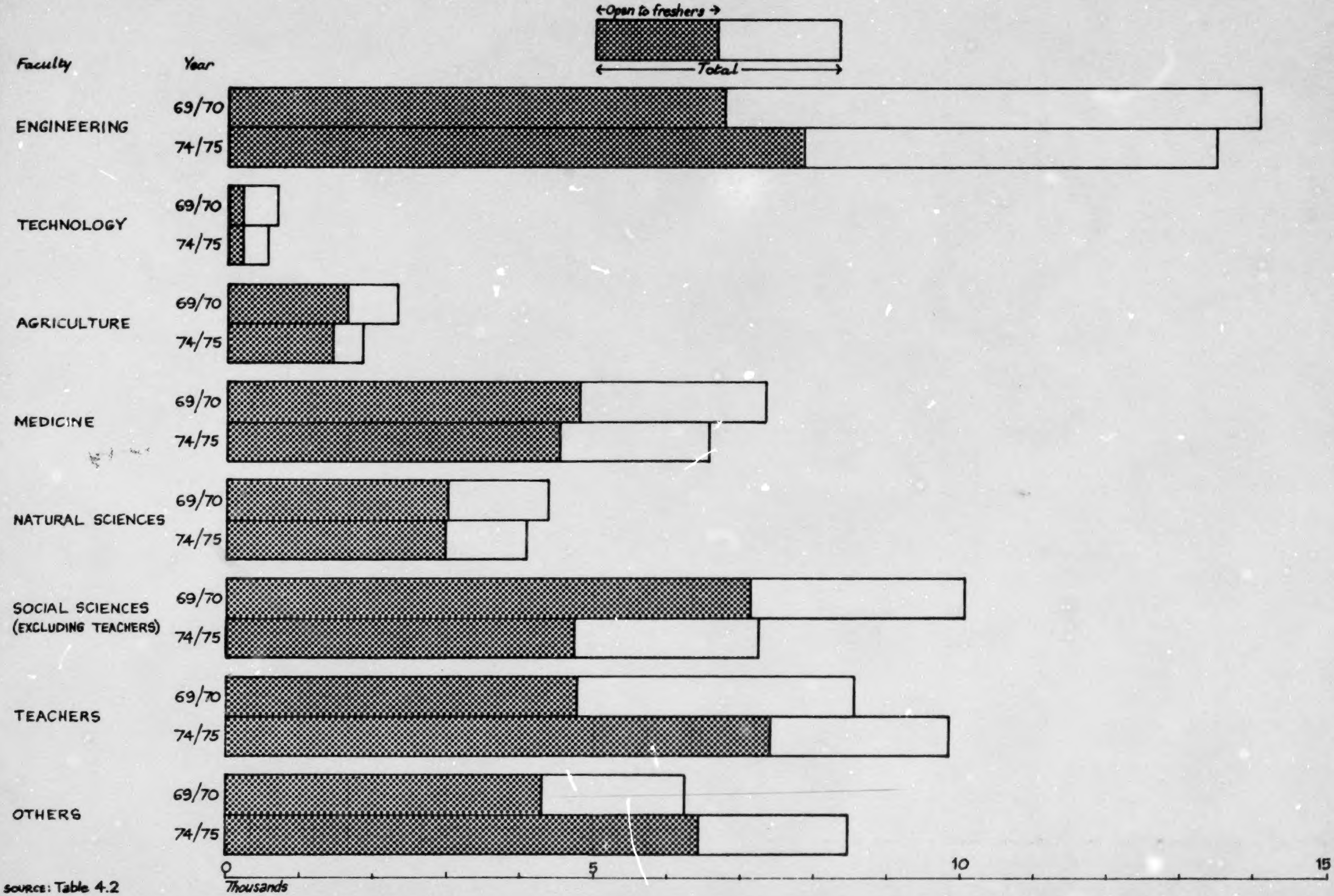
Table IV.2. Total number of vacancies notified and those open to freshers (Graduates and diploma holders) 1969-70 and 1974-75

	Number of Vacancies Notified in			
	1969-70		1974-75	
Faculty	Total	Open to Freshers	Total	Open to freshers
1	2	3	4	5
Engineering	14 063	6 776 (48.2)	13 469	7 829 (58.1)
Technology	677	190 (28.1)	542	194 (35.8)
Agriculture	2 311	1 637 (70.8)	1 828	1 436 (78.6)
Medicine	7 320	4 786 (65.4)	6 570	4 556 (69.3)
Natural Sciences	4 367	2 991 (68.5)	4 083	2 966 (72.6)
Social Sciences (excluding teachers)	10 044	7 139 (71.1)	7 233	4 727 (65.4)
Teachers	8 541	7 178 (84.0)	9 841	7 411 (75.3)
Others	6 229	4 291 (68.9)	8 484	6 427 (75.8)
TOTAL	53 552	34 988 (65.3)	52 050	35 546 (68.3)

Note: Figures in parentheses indicate percentage of vacancies for freshers to total vacancies.

Source: Employment Review (1969-70 and 1974-75) Directorate General of Employment and Training, Ministry of Labour, New Delhi.

GRAPH 6. Total number of vacancies notified and those open to freshers, 1969/70 and 1974/75



SOURCE: Table 4.2

Employability Indices :

How serious has been the overall employment situation can be seen from the data given in Table IV.3. The table provides data on (a) number of Employment Exchanges (b) vacancies notified (c) number of registrations effected during a year (d) number of placements effected during a year, and (e) number of applicants on Live Register at the end of a year. The last two columns of the table show the ratios of vacancies and placements to the number on Live Register. They may be called the "relative employability indices". The former as gross and the latter as net. While in 1953 the relationship between vacancies notified and number on Live Register was of the order of 1:2, but after little over two decades in 1975 this ratio has become 1:15, meaning thereby that for every vacancy notified there are now 15 persons on Live Register. In other words the gross employability index for persons registered with the Employment Exchange is only seven per cent. Similarly the net employability index has come down to 4.3 per cent in 1975 from 35.4 per cent in 1953. While the number of vacancies notified has grown up by only 2.5 times during the 22-year period under review, the number of applicants on the Live Register has gone up by as much as about 18 times during the same period. Further the base figure for the two was not the same e.g. the number of vacancies notified in 1953 were only 257,000, but the number of applicants on the Live Register were 522,000. Although these data are for all categories of persons, but the position of higher education graduates may relatively be more or less the same.

2. The manpower perspective

It is now intended to present the manpower perspective for the next five years. But before this is done some idea of the manpower planning and of the various agencies involved in it will be in order. This will be necessary to appreciate the relationship between higher education and labour market. Because the nature of match or mismatch is bound to differ in a situation where manpower planning is adhered to and higher education is expanded or contracted on the manpower considerations from another situation where there is no such planning and educational facilities expand suo moto. In India not all higher education is based on manpower requirement approach, but technical education and some professional courses are planned on the basis of manpower considerations. Actually the mixed economy concept also gets reflected in Indian higher education. Education in India is in the concurrent list and a state subject. But private philanthropic organisations do play a very important rôle and many times new institutions are set up as a result of their individual efforts. They also finance those institutions

Table IV.3. Number of vacancies notified and number of applicants on live Register of Employment Exchanges in India 1953-1975

Year	Number of employ-exchanges at the end	Number of vacancies notified during the period (000's)	Number of registration effected during the period (000's)	Number of placements effected during the period (000's)	Number of applicants on Live Register at the end (000's)	Vacancies as % of number on Live Register	Placements as % of number on Live Register
1	2	3	4	5	6	7	8
1953	126	257	1 409	185	522	49.2	35.4
1954	128	240	1 565	162	610	39.3	26.6
1955	136	281	1 584	170	692	40.6	24.6
1956	143	297	1 670	190	759	39.1	25.0
1957	181	297	1 775	192	922	32.2	20.9
1958	212	365	2 204	233	1 183	30.8	19.7
1959	244	424	2 472	271	1 421	29.8	19.1
1960	296	520	2 733	306	1 606	32.4	19.1
1961	325	708	3 230	404	1 833	38.6	22.0
1962	342	790	3 845	458	2 380	33.2	19.2
1963	353	909	4 152	536	2 518	36.1	21.3
1964	365	917	3 832	545	2 493	36.8	21.9
1965	376	946	3 958	570	2 585	36.6	22.1
1966	395	852	3 871	507	2 622	32.5	19.3
1967	399	699	3 912	431	2 740	25 5	15.7
1968	405	714	4 040	424	3 012	23.7	14.1
1969	416	722	4 201	432	3 424	21.1	12.6
1970	429	744	4 516	447	4 069	18.3	11.0
1971	437	814	5 130	507	5 100	16.0	9.9
1972	453	859	5 827	507	6 896	12.5	7.4
1973	465	871	6 145	519	8 218	10.6	6.3
1974	481	673	5 176	397	8 433	8.0	4.7
1975	504	682	5 443	404	9 326	7.3	4.3

Sources: Directorate General of Employment and Training, Ministry of Labour, New Delhi.
Indian Labour Statistics, Indian Labour Bureau, Simla.

3. Manpower Planning in India(1)

India recognised the need for proper development and utilisation of human resources long before she attained independence. The Indian National Congress in 1887 passed a resolution to elaborate a system of technical education and to employ more extensively the skills and talents of the people in the country. However, concrete steps in this context were taken only after the Second World War, when the postwar reconstruction plan was drawn up. Round about that time two expert committees were also set up to prepare long-term plans of development of national educational system and national health organisation. One of these expert committees, namely the Sargent Committee on Education (1944) suggested the structural reorganisation of the educational system and recognised the need to establish technical high schools with a view to meeting the needs of industry and commerce. The other committee namely, the Health Survey and Development Committee, also known as Bhore Committee (1946), prepared the perspective plan to ensure adequate availability of doctors and other paramedical personnel.

In 1947 the Government of India set up the Scientific Manpower Committee to recommend, among other things long-term plans of development of technical and scientific education so that no industrial development project was hampered for want of scientifc and technical manpower. Since then, the scientific and technical manpower has been the main concern in India's manpower planning strategies. The Scientific Manpower Committees developed empirical ratios global as well as by subject specialisation of production and requirements of scientists and engineers.

With the commencement of the planning era in 1951, manpower planning assumed considerable importance and recognition. The Planning Commission appointed ad hoc committees for estimating the requirements of the engineering and agricultural personnel. The recommendation of these committees formed the basis for development of technical and agricultural education. Towards the middle of the Second Five Year Plan (1956-61) the system of setting up of working groups to cover each of the major sectors of the economy was initiated. A Working Group on Technical Education and Vocational Training was set up in 1959 to take a long-term view of the likely requirements of technical personnel during the Third and the Fourth Five-Year Plans. The report of this Working Group may be considered to be a landmark in India's efforts to integrate manpower planning with economic planning in general and educational planning in particular. The system of setting up working groups continues with reference to each of the five-year plans. Now there is a separate sub group on manpower. The subgroup on manpower heavily relies on research conducted by various institutions such as the IAMR, the DGE&T, the CSIR and the ICAR. The Planning Commission generally concentrates on half a dozen categories of manpower. They are (a) engineering and technical manpower, (b) scientific manpower, (c) health and medical manpower, (d) agricultural and veterinary manpower (e) teaching manpower (school teachers) and (f) managerial manpower.

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(1) Extracted from the paper entitled "Education, Employment and Manpower", by the author published as a lesson in the Book for the Correspondence Course in Educational Planning and Management, developed by the National Staff College for Educational Planners and Administrators, New Delhi, 1978.

In 1956 a Directorate of Manpower was established to serve as the secretariat to the committee of the Cabinet which was set up to deal with the responsibility of coordinating and assisting in the formulation of manpower policies. It also maintained liaison and provided guidance to the state governments. The coordination among the central ministries was initially effected through an informal group consisting of representatives of various ministries. But in 1965 a Steering Group on Manpower was formally constituted. The Manpower Directorate acts as convenor of this Steering Group. The Steering Group reviews periodically the manpower situation in the country and identifies the current and anticipated manpower issues.

At the request of the Manpower Directorate the State Governments set up suitable units for manpower planning at the state level. But after the formulation of the Third Five-Year Plan many of these units were wound up. Again at the time of formulation of the Fourth Five-Year Plan, the Manpower Directorate and the Planning Commission took up the matter with the State Governments and as a result of this the States have set up State level units for manpower planning. These units are fairly compact and manned by high level officials.

As the work of manpower planning involves constant interchange of knowledge and experience, special investigations into the actual utilisation of human resources and a feedback from the employing agencies, it was decided to set up a research institute to consider the wide range of issues affecting the human resource development as an integral part of the economic plan. Accordingly, the Institute of Applied Manpower Research was set up in 1962 with sufficient autonomy and support from central and the state Governments, industry and labour. The Institute has mainly addressed itself to applied manpower research problems dealing with the assessment of stock, supply and demand for various categories of manpower. It has also taken up some studies dealing with the methodological aspects of manpower planning.

The specific groups of manpower studied by the Institute relate to engineering personnel, medical personnel (including nurses, dentists and pharmacists) agricultural personnel, managerial personnel and middle level and supervisory manpower. The methodology for each study has been evolved after taking into account the objectives of the project, available data and the nature of the group studied itself. The Institute also assisted the Education Commission (1964-66) in providing estimates of requirements of educationally qualified manpower. It has also participated in the Third All-India Educational Survey (1973) in so far as it related to the technical and vocational education and training. At present the Institute is engaged in a number of sectoral studies with a view to suggesting appropriate technologies in the unorganised sector so that employment opportunities could be provided on a larger scale.

Besides research the Institute also undertakes consultancy services for the industrial houses both public and private and the area studies for the State Governments. These consultancy assignments enable the Institute to have insights into the actual interplay of forces of demand and supply at the micro and regional levels. The Institute also runs a variety of training programmes for the National, State and enterprise level officials engaged in manpower planning.

4. Manpower Projections (1978-1983)

Removal of unemployment and significant reduction in underemployment are listed as the first principal objective of the development strategy of the Five-Year Plan 1978-83. The employment policy for the next five years is based on the consideration of providing employment to a large number of people who are below the poverty line (constituting 40 to 60 per cent of India's total population) and on the simple calculation that employment in large and medium industries will be incapable of absorbing more than a small fraction of the additional labour force. The employment strategy of the Plan (1978-83), therefore, is:

(a) to adopt an employment intensive sectoral planning,
(b) to regulate technological change to protect and enhance employment, and
(c) to promote area planning for full employment.

Besides the employment augmenting capacity of irrigated agriculture and the largely expanded allied sector of dairying, forestry and fisheries, the Plan is expected to generate employment through:

(a) the expansion of infrastructure and social services e.g. roads construction, electrification water supply, rural schools and community health services,

(b) a large increase in the consuming power, of the poor; such consumption will create additional employment for wage goods which will be produced by labour intensive methods.

The irrigation, power and housing programmes listed out in the Plan, also imply a massive increase in construction activity with a corresponding expansion of employment opportunities. If the Plan gets fully and successfully implemented and executed, it is estimated that it will generate the following magnitude of employment opportunities within the Plan period:

(i)	Agriculture and allied sector	22.77	million person yrs.
(ii)	Mining	0.45	"
(iii)	Manufacturing including cottage industries and small scale industry	8.92	"
(iv)	Construction and Services	17.13	"
	Total	49.27	"

The Plan is very emphatic in putting the emphasis to have technologies with a low capital to output ratio and on cottage, village and small scale industry sector. This should show that the usual sector employing higher educated manpower have not been assigned the priority which they had in the earlier plans. Further the current Plan has aimed at a moderate growth rate of 4.7 per cent per annum which is lower than the targeted growth rate in the earlier plans (ranging from 5 to 7 per cent per annum) but nevertheless higher than the actually achieved growth rate. The actual achievement in the earlier plans has been of the order of 3.2 to 3.8 per cent and in real per capita terms it varied between 1.0 to 1.5 per cent per annum only. When the actual growth rate has been so low, it is no wonder that unemployment of all types including underemployment should have increased over the planned period.

What will be the projected labour force and its distribution in terms of employed and unemployed as visualised by the Plan document? The data for the final plan year along with the current position and actuals for 1961 and 1971 are presented in Table IV.4. The footnotes to the table explain various assumptions on which the figures rest and also the methodology used in arriving at those figures. There are two sets of working force in non-agricultural

Table IV.4 Actual and projected distribution of labour force in India 1961-1983 (in millions)

Category	As on 31st March				Increase in 1983 over 1978
	1961	1971	1978	1983	
1	2	3	4	5	6
Chronically unemployed	1.42	3.61	4.37(1)	4.97(1)	0.60
Working force					
(a) Agricultural	137.80	167.33	192.43(4)	213.82	21.39
(b) Non agricultural	50.81	59.54	68.49	76.05	7.56
(i) Recorded employment	14.61	20.21	24.83(5)	27.56(2)	2.73
				27.82(3)	2.99
(ii) Other informal activities(6)	36.26	39.33	43.66	48.49(2)	4.83
				48.23(3)	4.57
TOTAL labour force	190.09	230.48	265.29	294.84	29.55

(1) The number of chronically unemployed has been estimated on the assumption that the rate of chronic unemployment will remain at the level of 1972-73.

(2) Based on the assumption that the growth rate of industrial production in the private sector will be 5 per cent during the next five years.

(3) Based on the assumption that the growth rate of industrial production in the private sector will be 7 per cent during the next five years.

(4) Derived by applying to the 1978 labour force, the average proportion of agricultural working force to the labour force as observed during 1961 and 1971.

(5) Obtained by adding the projected recorded employment in the public and private sectors. Public sector recorded employment has been projected by assuming that the average annual increase in recorded employment observed during the period March 1967 to March 1974 will continue in the period March 1974 to March 1978. Private sector recorded employment has been obtained by applying the estimated elasticity of private sector employment with respect to the index of industrial production during the period March 1967 to March 1974, to the annual growth in industrial production over the period March 1974 to March 1978.

(6) Obtained as a residual i.e. non agricultural working force (-) recorded employment.

sector - one based on 5 per cent growth rate of industrial production in the private sector and the other based on 7 per cent growth rate in this sector. However the estimate of chronically unemployed is based on the assumption of 5 per cent growth rate in the private sector industry. Chronic unemployment represents number of persons who remain unemployed throughout this year. This type of unemployment is of course, a very small part of the Indian unemployment problem. There is a considerable amount of irregular unemployment which can be calculated only in terms of number of weeks or days people have remained without work.

Table IV.4 reveals that in 1983 there will be 4.97 million persons chronically unemployed. This will be 0.6 million more than those in 1978. On the top of this it is likely that there will be a weekly unemployment of the order of 12.5 million and a person-day unemployment equivalent to 22.9 million person-years in 1983(1).

The Plan documents calculate the projected growth of employment during 1978 and 1983 in terms of person-years. A standard person-year is defined as of 9 months or 273 days of 8 hours per year. On the basis of these standard person-years the projected growth in employment at the end of the Plan period will be 216.33 million person-years. Of this, agriculture and allied sectors will account for 56.4 per cent or 121.98 million person-years, mining for 0.62 per cent, (1.35 million person-years), manufacturing 14.6 per cent (31.65 million person-years) and services and other activities for 28.4 per cent (61.35 million person-years). These figures cannot be compared with the figures of the projected labour force and its distribution presented in Table IV.4. Unless the latter are also converted into person-years. The adjusted labour force in standard person-years comes to 231.8 million years of which the employed will form 93.3 per cent, and the remaining 15.5 million person-years will be unemployed. Thus the unemployment rate will be about 7 per cent by the end of the current five-year plan (1983). The distribution of different types of unemployement in rural and urban India from 1971 to 1983 is presented in Table IV.5.

So far the position of the total labour force has been presented. It is now proposed to review and analyse the employment situation as it relates to the higher educated persons. For this purpose the first exercise attempted by the Planning Commission was to arrive at a workable figure of stock of graduates and engineering diploma holders for the year 1978, which is the first beginning year of the Five-Year Plan (1978-83). The distribution of

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(1) Draft Five-Year Plan - 1978-83, Govt. of India, Planning Commission, p.84.

Table IV.5. Estimated rural and urban unemployment

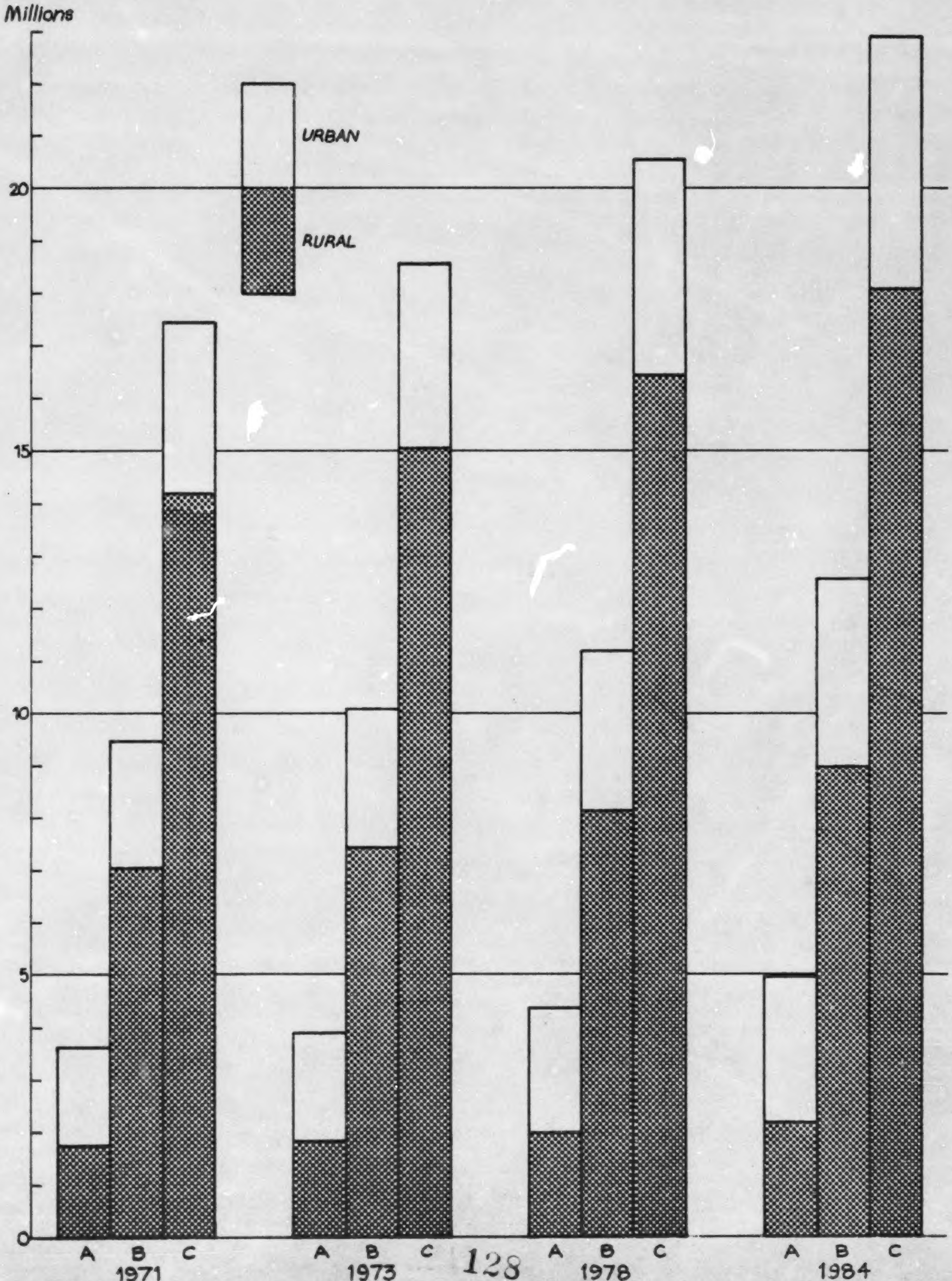
Sl. No.	Type of Unemployment	1971	1973		1978	1983
		Unemployment	Unemployment	Rate	Unemployment	Unemployment
(0)	(1)	(2)	(3)	(4)	(5)	(6)
				(%)		
1.	Rural	(Million)	(Million)		(Million)	(Million)
	Usual Status (Chronic)	1.73	1.83	0.92	2.00	2.20
	Weekly Status	7.04	7.46	3.88	8.15	8.98
	Daily Status	14.21	15.06	8.20	16.47	18.10
2.	Urban					
	Usual Status (Chronic)	1.88	2.04	5.03	2.37	2.77
	Weekly Status	2.41	2.61	6.56	3.04	3.55
	Daily Status	3.24	3.52	8.97	4.09	4.78
	Total					
	Usual Status (Chronic)	3.61	3.87	1.60	4.37	4.97
	Weekly Status	9.45	10.07	4.33	11.20	12.53
	Daily Status	17.45	18.57	8.34	20.56	22.88

Figures refer to 31st March of 1971, 1973, 1978 and 1983. They have been estimated by applying 1972-73 National Sample Survey 27th Round participation and unemployment rates for rural and urban males and females to the projection of the population of age 5 years or more.

Source: Report on the Employment Pattern of Graduates, Directorate Labour, New Delhi, 1976

GRAPH 7. Estimated rural and urban unemployment

A: usual status (chronic) B: weekly status C: daily status



SOURCE: Table 4.5

the estimated stock of graduates by field of education so arrived at for the year 1978, is presented in Table IV.6. The total stock of graduates in 1978 has been estimated at about 6.8 million of which 5.9 million or 87 per cent consisted of graduates and postgraduates in arts, science and commerce. The professional categories of graduates and engineering diploma holders accounted for only 13 per cent of the total stock of graduates.

The stock of graduates as will be seen from Table IV.7 is likely to increase from6.8 million in 1978 to about 9.5 million in 1983 or by 2.7 million in the five years of the Plan. The current unemployment rate at the time of the formulation of the Plan was estimated to be about 10 per cent - an unemployment to the tune of 0.7 million graduates in 1978. General arts, science and commerce graduates accounted for about 0.6 million out of the total unemployed graduates. On the basis of present trends there is likelihood that the rate of unemployment among graduates may increase to about 15 per cent. This means that the number of unemployed graduates will be nearly doubled from about 0.7 million in 1978 to about 1.4 million in 1983. In 1983 the proportion of arts, science and commerce graduates in the total stock of unemployed graduates will remain more or less the same and they will constitute as many as 1.2 million. Among specialised and professional categories of graduates such as engineers, agricultural graduates, medical graduates and also the postgraduates, the unemployment rates are relatively lower (2 to 8 per cent). In the case of commerce postgraduates the current unemployment rate is about 3 per cent but it may rise to the high level of 11 per cent by 1983. One category of veterinary graduates is the only one for which current figures as well as projections made by the Planning Commission show a growing shortage.

Briefly the outlook for the graduate labour market is that the educational system would be adding about 0.54 million graduate employment seekers every year; and the organised sector may absorb annually only 0.39 million of them, so that about 0.15 million of graduates would continue to be added every year to the stock of the unemployed. As the enrolments have been made for most of the courses, there is hardly anything which can be expected from the educational system to check the flow of these graduates over the next five years. Even if some of the enrolment could be reduced, it will not solve the problem of unemployment as the situation is even grimmer in the matriculate labour market where about 10 million youth may enter the labour market for being absorbed.

In spite of such a grave employment situation in the country, the government has not included population control as the basic ingredient of its overall employment policy. It need not be emphasised here that the manpower

Table IV.6. Estimated stocks of graduates and engineering diploma holders in 1974 and 1978

Category	Base year	Stock in Base year	Stock in 1974	Stock in 1978	Annual addition in stock during Base year to 1974	Annual addition in stock during 1974 and 1978
1	2	3	4	5	6	7
Engineering						
(a) degree holders	1969	132 000	206 400	251 860	14 880	11 365
(b) diploma holders	1969	192 000	272 300	346 730	16 060	29 970
Medical graduates and post-graduates	1974	138 000	138 000	174 320	-	9 080
Agricultural graduates and post-graduates	1974	76 000	76 000	93 360	-	3 340
Vet. science graduates and post-graduates	1974	16 600	16 600	19 336	-	685
Arts						
(a) graduates	1971	1 138 700	1 778 000	2 842 130	213 100	266 030
(b) post-graduates	1971	390 000	551 500	801 880	53 830	62 595
Science						
(a) graduates	1971	420 000	715 700	1 182 272	98 570	117 400
(b) post-graduates	1971	139 200	182 200	243 412	14 330	15 300
Commerce						
(a) graduates	1971	267 800	428 400	753 024	53 530	81 155
(b) post-graduates	1971	43 800	63 000	100 260	6 400	9 315

Source: Planning Commission, New Delhi.

Table IV.7. Estimated stock, employment and unemployment of graduates and engineering diploma holders in 1977-78 and 1982-83

Sl. No.	Category	1977-78			1982-83			Increase in stock 1982-83 over 1977-78			Percentage Increase in stock 1982-83 over 1977-78		
		Stock			Stock			Stock			Stock		
		Total	Employed	Un-employed	Total	Employed	Un-employed	Total	Employed	Un-employed	Total	Employed	Un-employed
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1.	Engineers	251860	245826	6034	322000	312591	9409	70140	66765	3375	27.8	27.2	55.9
	(Degree)	(100.00)	(97.6)	(2.4)	(100.00)	(97.1)	(2.9)	(100.00)	(95.2,	(4.8)			
2.	Engineers	346730	310680	36050	464290	390565	73725	117560	79885	37675	33.9	25.7	104.5
	(Diploma)	(100.00)	(89.6)	(10.4)	(100.00)	(84,1)	(15.9)	(100.00)	(67.9)	(32.1)			
3.	Medical Graduates & Post-Graduates	174320	170980	3340	216090	209600	6490	41770	38620	3150	24.0	22.6	94.3
		(100.00)	(98.1)	(1.9)	(100.00)	(97,0)	(3.0)	(100.00)	(92.4)	(7.6)			
4.	Agricultural Graduates & Post-Graduates	93360	87806	5554	114190	109481	4709	20830	21675	—845	22.3	24.7	—15.2
		(100.00)	(94.1)	(5.9)	(100.00)	(95.9)	(4.1)	(100.00)	(104.0)	(—4.0)			
5.	Veterinary Graduates & Post-Graduates	19336	22690	(—)3354	22616	28495	(—)5879	3280	5805	—2525	17.0	25.6	..
		(100.00)	(117.3)	(—17.3)	(100.00)	(126.0)	(—26.0)	(100.00)	(177.0)	(—77.0)			
6.	Arts Graduates	2842130	2531879	310251	4019420	3240865	778555	1177290	708986	468304	41.4	28.0	150.9
		(100.00)	(89.1)	(10.9)	(100.00)	(80.6)	(19.4)	(100.00)	(60.2)	(39.8)			
7.	Arts Post-Graduates	801680	767004	34676	1091900	1030642	61258	290220	263638	26582	36.2	34.4	76.7
		(100.00)	(95.7)	(4.3)	(100.00)	(94.4)	(5.6)	(100.00)	(90.8)	(9.2)			
8.	Science Graduates	1182272	992216	190056	1694660	1423434	271226	512388	431218	81170	43.3	43.4	42.7
		(100.00)	(83.9)	(16.1)	(100.00)	(84.0)	(16.0)	(100.00)	(84.2)	(15.8)			
9.	Science Post-Graduates	243412	228588	14824	317742	293340	24402	74330	64752	9578	30.5	28.3	64.6
		(100.00)	(93.9)	(6.1)	(100.00)	(92.3)	(7.7)	(100.00)	(87.1)	(12.9)			
10.	Commerce Graduates	753024	658283	94741	1091070	903267	187803	338046	244984	93062	44.9	37.2	98.2
		(100.00)	(87.4)	(12.6)	(100.00)	(82.8)	(17.2)	(100.00)	(72.5)	(27.5)			
11.	Commerce Post-Graduates	100260	96930	3330	138847	124012	14835	38587	27082	11505	38.5	27.9	345.5
		(100.00)	(96.7)	(3.3)	(100.00)	(89.3)	(10.7)	(100.00)	(70.2)	(29.8)			
	Total	6808384	6112882	695502	9492825	8066292	1426533	2684441	1953410	731031	39.4	32.0	105.1
		(100.00)	(89.8)	(10.2)	(100.00)	(85.0)	(15.0)	(100.00)	(72.8)	(27.2)			

Figures in perentheses indicate percentages of the stock of each group.

For each manpower group a base period stock estimate is built up. Projections have been made with assumed rates ofinstitutional out-turn and attrition due to retirement, death and migration.

In the case of arts, science and commerce graduates, the base period stock is for 1971 Census figures. Available out-turn and attrition rates are applied to this stock. The attrition rate varies from one per cent to two per cent for different categories of graduates.

Unemployment is estimated by applying to the Register figures adjustment factors worked out by the DGEST in 1968 and 1972. Employment in 1968-76 is estimated by deducting the estimated number of unemployed from the estimates stock. The Annual rate of absorption during the period 1968-76 is used for projecting employment in 1977-78 and 1982-83. For these years unemployment is estimated or residual. For arts, commerc commerce graduates the annual rate of attrition assumed relates to the period 1971-1976.

Source: Draft Five Year Plan, 1978-83.

situation at any point in time in any place is the result of the interplay of demographic, educational and labour market (economic) forces. Unless and until demographic forces are not channelised in proper direction and magnitude, the unemployment problem is going to be with us every time in more serious and grave form. Further the Plan does not seem to have very seriously taken manpower as a resource. It has acted only as a constraint otherwise a plan for development should not leave any single person without ensuring his or her proper utilisation.

5. Reasons for the increased demand for education

Growing unemployment among the educated persons has not brought down the expansion in higher education in absolute numbers. It, therefore, becomes quite clear that higher education is not expanding just to meet the demand for increased economic activity based on sophisticated manpower requirements calculations, but for some other reasons too. Its expansion can be explained by a combination of a variety of factors. Some of the important reasons responsible for rapid expansion in spite of the growing and huge unemployment among the graduates may be listed below:

(a) Social Status

Higher education has always been sought for the social status attached to university degrees. A person who holds a university degree commands higher social status than the one who does not have it. Although the latter may be employed and earning more than the former (if he is employed). In India matrimonial decisions are generally decided on the basis of educational qualifications and the amount of dowery is negatively correlated to the amount of education the bride had and positively related to the amount of education the bridegroom has.

(2) Awakening among the rural population

Till very late higher education has been predominantly the occupation of people living in cities and towns. The rural population has been by and large either illiterate or with little schooling but very rarely any higher education. But things have started changing, the people in rural areas are asking for higher education in ever increasing numbers since they see the progress achieved by their counterparts in urban areas through the input of higher education. As the rural population is very large, even a small percentage of them results in swelling the numbers in universities and colleges. The demand for higher education from rural areas has compelled the government to open many colleges and institutions of higher learning in rural areas themselves.

(c) Growing hunger among the urban people

Seeing the prosperity and the social status of his next door neighbour, the urban people - the common men in urban areas have started sending their children to universities and colleges.

(d) Disappearance of the "old job" values

Some old jobs specially the manual ones are losing their social value and importance. For example, traditional washing and modern dry-cleaning are just two different occupations. The former has very low social value and cannot be expected to be taken up by any educated person but the latter has attracted even many graduates in big cities.

(e) Wage differentials

There is a wide wage/salary differential between jobs peformed by university graduates and those with less education. Due to this difference, people prefer to go for higher education. Prof. Bose(1) has shown that average disposable income rises with every successive level of education. Although the data relate to urban areas, yet this should also hold good for rural areas.

Educational Standard	Average disposable income per household (Rs.)
- Nil or no education	1,063
- Primary education	1,623
- Below matric	2,253
- Matric	3,479
- Intermediate	3,962
- Graduate (non technical)	4,847
- Gruaduate (technical)	6,799
- Postgraduate	7,508

Statistical information like the above one has a demonstration effect for higher education to be desired by more and more people.

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(1) P.K. Bose - Higher Education at Cross Roads. World Press Private Ltd. Calcutta, 1977 p.27.

(f) Lack of jobs at lower levels

As there are not enough jobs at the middle and sub-professional levels and also that these jobs do not carry a comparable decent wage, there is always a tendency to pursue higher education in the belief that it improves the chances for a better job. This point has already been elaborated under the heading "educational inflation".

(g) Less expensive higher education

Barring the professional courses, higher education, specially the general arts, science, commerce, law, education, etc., is very cheap both for the individual student and the State. For this type of education the major recurring cost comprises teaching cost which is comparatively small, as this education can be provided on a larger pupil-teacher ration. Further, this type of education does not require elaborate lab and workshop facilities and other expensive material for practical demonstration.

(h) Equality considerations

Socialistic pattern of society, being the philosophy of the government, it has been trying to see that higher education (and for that matter any kind of education) reaches all sections of the society. To ensure this, special measures in the form of reservation of seats and institution of various scholarship schemes have been taken up by the government. The government is trying to have a balanced policy to provide equal opportunities for education to the weaker sections of the society including women.

(i) Improvement in economic conditions

There has been a general improvement in the economic conditions of the people and this has led to increase in demand for higher education.

(j) Recruitment base in higher education

It is interesting to mention here that in spite of the assertion that there is no relationship between the academic qualifications and job performance, yet employers depend on academic achievement while recruiting their employees.

(k) Easy access

As far as professional courses are concerned there is a tough competition and screening of students for admission to them, but the private run colleges for general arts, science and commerce education pursue an open-door policy for admission. This makes it easy for even the less talented students to secure admission to higher education.

(l) Government employment policy

When unemployment takes place, government is placed under pressure to expand the civil services or open up new avenues to absorb the unemployed graduates. This practice encourages more students to enter or continue in higher education.

The above reasons should establish that expansion in higher education is not primarily a function of manpower demand. It is governed by a host of social and economic considerations and any policy to check the expansion has to take all these factors into account.

The effect of social demand on expansion of higher education has been quite substantial. In this regard a number of factors which have caused push effect and pull effect can be identified. Panchamukhi has recently made an analysis of these(1). According to him, the increase in the number of school final pass outs (thus opening up for them the option for higher education) coupled with heavy subsidisations of higher education and liberal assistance to the students of backward communities, etc., have exercised a push effect on enrolments. On the other hand, the developmental strategy adopted by the country and the widening of the scope of the government activity (government being the largest employer of higher educated manpower) have caused a pull effect on enrolments.

The results presented in Table IV.8 are those attained by regressing the fresh enrolment in the institutions of higher education upon the pass outs of the final school examination, indicating the option effect and the number of colleges indicating roughly the availability of facilities and hence the inducement effect. Out of the various models, equation 3 presents the best fit explaining nearly 91 per cent of variations in student enrolment with the help of school final pass out and the number of colleges as the explanatory variable. The results suggest that the elasticity of college admissions with respect to school final pass outs is positive and less than unity (0.7979). Since the coefficient for X_2 (number of colleges) is statistically not significant, it may be concluded that the option effect was mainly responsible for the enrolment expansion in higher education.

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(1) Panchamukhi, P.R., Employment and Educational Policy- Manpower Journal, Vol. XIV No.1, April-June 1978, IAMR, New Delhi.

Table IV.8. Estimated equations

Form of the equation	a	b_1	b_2	b_3	R^2	F
1) $Y = a + b_1X_1 + b_2X_2$	156.7400*	0.3208	0.0802	—	0.8710	47.28
T values	(4.28)	(1.24)	(0.88)			
2) $Y = \log a + b_1 \log X_1 + b_2 \log X_2$	−1534.4500*	384.9100*	302.38	—	0.8910	37.24
T values	(−7.65)	(1.35)	(1.11)			
3) $\log Y = \log a + b_1 \log X_1 + b_2 \log X_2$	0.7382*	0.7949*	−0.0863	—	0.9082	69.23
T values	(3.98)	(3.03)	(−0.34)			
4) $Y = a + b_1X_1 + b_2X_2 + b_3X_3$	306.1400*	−0.2057	0.2181	−0.1964	0.8533	17.44
T values	(5.07)	(−0.71)	(0.23)	(−1.01)		
5) $Y = \log a + b_1 \log X_1 + b_2 \log X_2 + b_3 \log X_3$	−1136.4405*	−350.9800	865.1000*	−67.8200*	0.8104*	12.82
T values	(−3.39)	(−0.55)	(1.63)	(−1.43)		
6) $\log Y = \log a + b_1 \log X_1 + b_2 \log X_2 + b_3 \log X_3$	1.3500*	−0.2300	0.6584*	−0.0493*	0.8456	16.43
T values	(5.59)	(−0.52)	(1.74)	(−1.47)		

Where :

Y — Number of students enrolled in the First Year of College.

X_1 — Number of students who passed out in the school final.

X_2 — Number of colleges.

X_3 — Per capita National Income (indicating capacity to meet education costs).

* — marked coefficients are statistically significant at 0.90 level as per t test.

Source: Manpower Journal Vo.XIV No.1 April-June 1978
Institute of Applied Manpower Research, New Delhi

6. Occupational/Educational matrix

At the end of this section and also the paper, it is proposed to show the relationship between education and occupation. Two sets of data showing the educational profile of various occupations are presented in Tables IV.9 and IV.10. The data given in Table IV.9 relate to (a) professional, technical and related workers and (b) administrative, executive and managerial workers, employed in public and private sectors. Part "A" of Table IV.9 presents the analysis for the public sector and Part "B" of the same table for private sector. However in both parts A and B of the table educational profile of only numerically important categories of employees who are also crucial for economic deve[illegible]ment, have been given. The occupational categories have been followed at [illegible] five digits, even then they are not specific occupation titles but only a group of alike occupational titles.

The data contained in Table IV.10 relate to the flow of 1968 graduates from various Indian universities. This set of data is different from the one given in Table IV.9 in so far that this represents the occupation-education matrix at the time of first employment while the one given in Table IV.9 relates to the situation of the working stock at a point of time thereby having a lot of effect of service experience and internal on-the-job training wherever such training existed in the establishments. It is proposed to take up these two sets of data separately and present the analysis accordingly.

In Table IV.9 an attempt has been made to show the extent to which three educational qualifications can explain the distribution of persons in a particular occupation. If the three educational titles do not encompass 75 per cent or more persons employed in a particular occupation, a circle is put around the score in the frequency socre column. The cut point of 75 per cent has been arbitrarily decided as it was observed that in most cases three educational titles did cover three fourths of the persons working in a particular occupation. There is, however, no sanctity in this cut point of 75 per cent and if it is decided to take only the modal qualification, the table

It is observed that it is only the medical occupation where modal educational qualification takes care of more than 75 per cent of the total persons employed in that occupation. Actually the modal education (degree in medicine) is seen to be possessed by as many as 85 to 91 per cent physicians and surgeons. The other occupational categories where two degrees (or educational qualifications cover more than 75 per cent persons, are engineers of various designations, university teachers, sanitary inspectors, X-Ray technicians,(1) cartographers, surveyors, midwives, and managers of the financial institutions. There were also quite a few occupations where these educational qualifications could not cover 75 per cent of the total employees in those individual occupations. Mention in this category must be made of some occupations in engineering, veterinarians, agronomists, pharmacists, pisciculturists, horticulturists, soil scientists, etc. Other details can be seen from Table IV.9.

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(1) In private sector the X-Ray technicians were having a large variety of educational and training background. Even these educational qualifications in the private sector could cover only two thirds of the X-Ray technicians.

The DGE&T has done good work to have started providing employment statistics by industry occupation and education. (In this paper industry-wise occupation, education relationships are not analysed). Whereas the industrial and occupational titles have been standardised and coded, the educational qualifications have not yet been so rationalised and coded. It will be an extremely important step if all the educational curricula are listed, classified and coded. Then these code numbers used to designate the place of any particular higher educational award in the classified scheme could also be followed by the Ministry of Education while awarding diplomas and degrees. The employment returns secured from the establishments in the private and public sectors should bear these educational code numbers and the data obtained from them should then be generated accordingly. This will facilitate the understanding of the relationships of educational titles and the occupations in various industries of both public and private sectors.

The data presented in Table IV.10 have a neater classification of educational titles and subjects. However, the occupational classification is too broad and the data in the table suffer from this limitation. The teaching occupation cuts across all the educational qualifications of the graduates. It also seems to be the most important occupation as far as postgraduate students are concerned. In comparison to postgraduates, the graduates seem to have more occupational variety.

The data presented in Tables IV.9 and IV.10 clearly bring out the fact that the relationship between education and employment is neither fixed nor flexible, i.e. the same education can lead to several types of jobs and conversely, several types of education can provide access to the same job. The reasons for this state of affairs may be as follows:

(a) Differences in the size, product mix, levels of technology

As the occupational classification does not differentiate between establishments of different sizes in terms of investment or employment and also the type of product mix produced by them and the level of technology used by them, the actual job contents of the same occupations differ considerably and therefore they take persons of different qualifications.

Table IV.9 (a). Proportion of professional, technical, administrative and managerial personnel in public sector covered by the three most important educational qualifications, 1970

Occupation	Number of cases	First choice qualification (Modal qualification)		Second choice qualification		Third choice qualification		Frequency score	Total
Civil Engg. Structural	18 392	Degree in Engg./Tech.	61.2	Dip. in Engg./Tech.	27.8	- -		2	88.0
Mechanical Engg. General	12 836	Diploma in Engg./Tech.	41.0	Degree in Engg./Tech.	31.6	Undergraduates in Gen. Ed.	12.9	3	85.5
Electrical Engg.	14 129	Degree in Engg./Tech.	41.0	Diploma in Engg./Tech.	46.2	-		2	87.2
Mining Engg. general	456	Degree in Engg./Tech.	41.4	Diploma in Engg./Tech.	37.3	-		2	79.7
Overseer civil Engg.	49 034	Diploma in Engg./Tech.	73.3	Undergraduates	10.1	-		2	83.4
Chemist general	2 473	Graduates in science	54.7	Post-graduates in science	15.6	Undergraduates in gen. ed.	14.5	3	84.8
Meteorologist	1 285	Post-graduates in science	42.6	Graduates in science	28.6	Undergraduates in gen. ed.	21.5	3	92.7
Geologist	1 153	Post-graduates in science	69.8	Graduates in science	13.8	-		2	83.6
Veterinary surgeon	6 549	Degree in medicine	35.6	Degree in agriculture	28.7	Diploma in medicine	13.0	3	77.3
Agronomists	8 565	Degree in agriculture	49.4	Undergraduates	12.3	Certificate holders	9.8	③	71.5
Physician general (doctors)	13 769	Degree in medicine	85.1	-		-		1	85.1
Surgeon general	6 357	Degree in medicine	90.7	-		-		1	90.7
Physician (ayurvedic)	7 955	Degree in medicine	45.1	Diploma in medicine	35.5	-		2	80.6
Health officer	1 844	Degree in medicine	45.2	Diploma in medicine	13.1	Graduate in gen. ed.	11.8	③	70.1
General Nurse	24 703	Diploma in medicine(nursing)	30.1	Certificate holders	29.4	Undergraduates in gen. ed.	21.8	3	81.2
Midwife	25 171	Certificate holders	38.9	Below matric	36.9	-		2	75.8
Lady Health visitor	8 960	Undergraduates gen. ed.	45.6	Below matric	21.1	Certificate holders	20.3	3	87.0
University teacher arts subj.	12 472	Post-graduates in arts subj.	57.2	Degree in education	28.5	-		2	85.7
University teacher science subj.	6 820	Post-graduates in science subj.	69.2	Degree in education	12.6	-		2	81.8
University teacher medicine	4 973	Degree in medicine	89.0	-		-		1	89.0
University teacher agri. subj.	1 400	Degree in agriculture	65.2	Post-graduates in science	13.4	-		2	78.6
University teacher engineering	7 015	Degree in Engg./Tech.	57.5	Diploma in Engg./Tech.	21.4	-		2	78.9
Secondary school teachers	137 806	Degree in education	61.4	Certificate in education	10.1	Undergraduates in gen. ed.	8.8	3	80.3
Arts teacher	9 784	Certificate in education	84.7	-		-		1	84.7
Manual training teacher	23 866	Certificate in Phy.education	64.5	Undergraduates in gen.ed.	10.3	-		2	74.8
Town planner	413	Degree in Engg.Tech.	45.3	Dip. in Engg./Tech.	25.9	Other diploma	12.8	3	84.0
Civil engg./ general	2 769	Degree in Engg./Tech.	61.8	Diploma in Engg./Tech.	26.1	-		2	87.9
Civil Engg./ general	2 846	Degree in Engg./Tech.	54.2	Diploma in Engg./Tech.	35.9	-		2	90.1
Highway civil enginee	1 002	Degree in Engg./Tech.	60.0	Diploma in Engg./Tech.	22.5	-		2	82.5
Civil Engg. Sanitation and health	687	Degree in Engg./Tech.	38.8	Diploma in Engg./Tech.	34.3	Undergraduates in gen. ed.	15.4	3	88.5
Designer machines	928	Degree in Engg./Tech.	53.8	Diploma in Engg./Tech.	19.2	Certificate holders	11.2	3	84.2
Mech. Engineer Production	1 947	Graduate in Arts	30.0	Degree in Engg./Tech.	16.6	Undergraduates in gen. ed.	13.6	3	60.2
Mech. Engineer automobile	685	Diploma in Engg./Tech.	46.7	Degree in Engg./Tech.	22.6	Undergraduates in gen. ed.	12.0	3	81.3
Mech. Engineers others	5 291	Diploma in Engg./Tech.	46.1	Degree in Engg./Tech.	25.9	Undergraduates in gen. ed.	10.2	3	82.2
Electrical Engg. general	1 274	Degree in Engg./Tech.	62.5	Diploma in Engg./Tech.	17.9	-		2	80.4
Electrical Engg. design	1 386	Degree in Engg./Tech.	55.5	Diploma in Engg./Tech.	21.4				
Telecommunication Engg.	2 548	Diploma in Engg./Tech.	29.1	Graduates in science	20.5	Degree in Engineering/Tech.	16.5	③	66.1
Radio Engineers	1 010	Diploma in Engg./Tech.	31.7	Degree in Engg./Tech.	27.6	Graduates in science	17.1	3	76.4
Chemical engineers	828	Degree in Engg./Tech.	63.9	Degree in Engg./Tech.	15.9	-		2	89.8
Surveyor topographical	5 763	Undergraduates in gen. ed.	50.4	Certificate holders	21.5	Diploma in Engg./Tech.	10.8	3	82.7

Table IV.9 (a). (continued)

Occupation	Number of cases	First choice qualification (Modal qualification)		Second choice qualification		Third choice qualification		Frequency score	Total
Plane tabler	14 332	Undergraduates in gen. ed.	41.8	Below matric	28.7	Certificate holders	19.6	3	90.1
Surveyor, others	1 767	Undergraduates in gen. ed.	44.1	Below matric	17.1	Certificate holders	16.6	3	78.8
Physicists	1 131	Graduates in science	85.9	-		-		1	85.9
Pisciculturists	1 049	Undergraduates in gen. ed.	40.9	Graduates in science	19.8	Post-graduates in science	13.3	③	74.0
Veterinarians general	1 841	Degree in medicine	32.8	Degree in agriculture	24.3	Undergraduates in gen. ed.	15.4	③	72.5
Horticulturists	1 915	Degree in agriculture	39.5	Certificate holders	17.9	Undergraduates in gen. ed.	13.9	③	71.3
Soil scientists	1 142	Degree in agriculture	34.9	Post-graduates in science	23.5	Graduates in science	10.8	③	69.2
Soil conservationists	3 622	Degree in agriculture	35.0	Undergraduates in gen. ed.	19.0	Diploma holders	16.2	③	70.2
Physiotherapy technicians	748	Undergraduates in gen. ed.	35.4	Below matric	21.9	Diploma in medicine	16.7	③	74.0
Sanitary Inspector	40 528	Undergraduates in gen. ed.	40.5	Below matric	48.1	-		2	88.6
X-ray Technicians	12 816	Certificate holders	69.4	Diploma in medicine	23.2	-		2	92.6
Draughtsmen architectural	1 600	Undergraduates in gen. ed.	40.3	Diploma in Engg./Tech.	26.2	Certificate holders	20.0	3	86.5
Draughtsmen civil	29 392	Certificate holders	20.7	Undergraduates in gen. ed.	20.4	Diploma in Engg./Tech.	17.9	③	69.0
Draughtsmen mechanical	4 163	Undergraduates in gen. ed.	40.4	Diploma in Engg./Tech.	25.8	Certificate holders	25.1	3	91.3
Draughtsmen electrical	1 967	Undergraduates in gen. ed.	38.3	Diploma in Engg./Tech.	26.7	Certificate holders	26.7	3	91.7
Cartographer	819	Undergraduates in gen. ed.	71.0	Diploma in Engg./Tech.	9.2	-		2	80.2
1. **Administrative officials:**									
Union govt.	3 457	Graduates in Arts	36.9	Undergraduates in gen. ed.	21.4	Post-graduates in arts/Law	13.7	③	72.0
State govt.	8 124	Graduates in arts	29.5	Undergraduates in gen. ed.	21.6	Post-graduates in Arts/Law	16.8	③	76.9
Quasi govt.	11 522	Graduates in arts	32.8	Undergraduates in gen. ed.	32.8	Degree in Engg./Tech.	7.4	③	73.0
2. **Executive officials:**									
Union govt.	12 670	Graduates in arts	42.0	Undergraduates in gen. ed.	29.8	Post-graduates in Arts/Law	7.9	3	79.7
State govt.	110 199	Undergraduates in gen. ed.	36.0	Graduates in Arts	26.9	Below matric	9.3	③	72.2
3. **Manager:**									
Bank	14 812	Undergraduates in gen. ed.	47.5	Graduates in Arts	31.3	-		2	78.8
Insurance	3 145	Graduates in arts	42.0	Undergraduates in gen. ed.	37.4	-		2	79.4
Manufacturing	1 756	Undergraduates	37.9	Diploma in Engg./Tech.	12.3	Degree in Engg./Tech.	11.4 (1)	3	61.6
Transport	1 936	Graduates in arts	35.2	Undergraduates in gen. ed.	33.6	Below matric	10.9	3	79.7
Communication	3 073	Undergraduates in gen. ed.	66.2	Graduates in Arts	22.8	-		2	89.0
Wholesale trade	785	Undergraduates in gen. ed.	39.1	Graduates in Arts	25.0	Degree in Engg./Tech.	17.7	3	81.8
Retail trade	956	Below matric	52.9	Graduates in science	29.0	-		2	81.9
Other services	1 588	Undergraduates in gen. ed.	50.0	Graduates in Arts	20.3	Below matric	6.2	3	76.5

(1) Graduates in Arts/and persons with below matric qualifications also constituted 11 per cent each.

Source: Occupational, Educational pattern in India, Public sector, 1970, Directorate general of employment and training, Ministry of Labour, New Delhi.

Table IV.9 (b). Proportion of professional technical, administrative and managerial personnel in private sector, covered by the three most important educational qualifications, 1971

Occupation	Number of cases	First choice qualification		Second choice qualification		Third choice qualification		Frequency score	Total
Architects	359	Graduates in science	78.3	-		-		1	78.3
Civil Engineers general	568	Degree in Engg./Tech.	47.2	Diploma in Engg./Tech.	36.3	-		2	83.5
Civil Engg. Structural	2 590	Degree in Engg./Tech.	65.7	Diploma in Engg./Tech.	21.8	-		2	87.5
Civil Engg. Irrigation	217	Diploma in Engg./Tech.	98.6	-		-		1	98.6
Civil Engg. Highway	60	Diploma in Engg./Tech.	63.3	Certificate	31.7	-		2	95.0
Overseer civil Engg.	2 492	Diploma in Engg./Tech.	43.7	Below matric	30.0	Undergraduates in Gen. ed.	9.2	3	82.9
Mechanical Engg. general	19 546	Degree in Engg./Tech.	42.3	Diploma in Engg./Tech.	32.4	-		2	74.7
Designer machines	1 361	Certificate holders	39.5	Degree in Engg./Tech.	25.4	Diploma in Engg./Tech.	15.9	3	80.8
Mechanical Engg. production	1 788	Degree in Engg./Tech.	40.1	Diploma in Engg./Tech.	35.2	-		2	75.3
Mechanical Engg. maintenance	539	Diploma in Engg./Tech.	42.7	Degree in Engg./Tech.	35.6	-		2	78.3
Mechanical Engg. automobile	326	Diploma in Engg./Tech.	54.0	Degree in Engg./Tech.	18.4	Undergraduates in Gen. ed.		3	13.2
Mechanical Engg. others	2 656	Diploma in Engg./Tech.	60.6	Degree in Engg./Tech.	17.8	-		2	78.4
Electrical Engg. General	379	Degree in Engg./Tech.	45.7	Diploma in Engg./Tech.	41.7	-		2	87.4
Designer Elect. Engg.	511	Diploma in Engg./Tech.	48.1	Degree in Engg./Tech.	44.4	-		2	92.5
Radio Engineering	207	Diploma in Engg./Tech.	44.9	Degree in Engg./Tech.	34.3	-		2	79.2
Tele. Communication Engg.	211	Degree in Engg./Tech.	34.6	Diploma in Engg./Tech.	16.1	Undergraduates in Gen. Ed.	13.7	③	64.4
Electrical Engg. others	544	Diploma in Engg./Tech.	46.3	Undergraduate in Gen. Ed.	15.1	Certificate holder	14.0	3	76.4
Chemical Engg.	1 097	Degree in Engg./Tech.	56.4	Diploma in Engg./Tech.	21.7	-		2	78.1
Mining Engg. general	728	Diploma in Engg./Tech.	23.5	Degree in Engg./Tech.	18.4	Certificate holders	17.0	③	58.9
Surveyor topographical	257	Undergraduate in Gen. Ed.	30.5	Below matric	19.5	Certificate holders	19.5	③	69.5
Surveyor mine	885	Certificate holders	65.1	Diploma in Engg./Tech.	15.9	-		2	81.0
Plane Table	563	Below matric	48.3	Certificate holders	19.4	Undergraduates in Gen. Ed.	16.7	3	84.4
Planning Engineer	536	Degree in Engg./Tech.	53.0	Diploma in Engg./Tech.	24.6	-		2	77.6
Industrial Engineer	350	Degree in Engg./Tech.	48.6	Diploma in Engg./Tech.	27.4	-		2	76.0
Instrument Engineer	273	Diploma in Engg./Tech.	40.3	Degree in Engg./Tech.	26.7	Undergraduates in Gen. Ed.	15.8	3	82.8
Works Inspector Engineering	1 575	Undergraduate in gen. ed.	38.6	Diploma in Engg./Tech.	25.8	Degree in Engg./Tech. (1)	12.4	3	76.8
Chemist general	8 016	Graduates in science	60.1	Post-graduates in science	11.4	Diploma in medicine	8.3	3	79.8
Pharmaceutical chemists	1 394	Graduates in science	58.6	Undergraduates in Gen. Ed.	13.9	Post-graduates in science	13.1	3	85.6
Veterinarian general and surgeon	186	Degree in agriculture	26.9	Post-graduates in science	22.6	Degree en medicine	22.0	③	71.5
Agronomists	534	Degree in agriculture	33.0	Post-graduates in science	28.5	Below matric	17.4	3	78.9
Physician general and surgeon	4 379	Degree in medicine	72.1	Diploma in medicine	23.4	-		2	95.5
Physician (ayurvedic)	449	Degree in medicine	64.6	Certificate holders	18.5	-		2	83.1
General Nurse	8 744	Certificate holders	35.2	Diploma in medicine	31.0	Undergraduates in Gen. Ed.	17.7	3	84.9
Midwife	1 917	Certificate holders	51.8	Below Matric	30.9	-		2	82.7
Pharmacist	5 905	Below matric	27.8	Undergraduates in Gen. Ed.	24.6	Diploma in medicine (2)	13.0	③	65.4

Table IV.9 (b). (continued)

Physio Therapy Technicians	249	Diploma in medicine	42.8	Undergraduates in Gen. Ed.	24.1	Certificate holders	15.3	3	82.2
Sanitary Inspector	359	Under-graduate	32.7	Below matric	30.4	Certificate holders	20.9	3	84.0
X-Ray technicians	616	Below matric	36.2	Diploma in Engg.	17.7	Diploma in medicine	12.7	③	66.6
University Teach. Arts Sub.	35 700	Post-graduates in arts	65.7	Degree in education	20.3	-		2	86.0
University teacher commerce	2 166	Post-graduates in commerce	55.6	Post-graduates in arts	36.2	-		2	91.8
University teacher science	14 859	Post-graduates in science	76.5	-		-		1	76.5
University teacher medicine	1 267	Degree en medicine	63.7	Diploma in medicine	13.8	-		2	77.5
University teacher Engg.	4 105	Degree in Engg./Tech.	51.6	Post-graduates in science	20.0	Diploma in Engg./Tech.	14.3	3	85.9
University teacher Agriculture	1 008	Post-graduates in science	47.7	Degree in education	26.8	Degree in agriculture	21.9	3	96.4
University teacher Law	816	Degree in law	75.0	-		-		1	75.0
University teacher Veterinary sc.	122	Post-graduates in science	77.1	-		-		1	77.1
University teacher Other subjects	1 779	Post-graduates in arts sub.	33.7	Degree in education	17.5	Post-graduates) Degree in commerce (3))	16.0	3	67.2
Secondary School teacher	200 823	Graduates in education	35.2	Graduates in science	19.5	Graduates in arts (4)	11.7	③	66.4
Middle school teacher	116 842	Certificate holders	68.5	Undergraduates in Gen. Ed.	13.1	-		2	81.6
Primary school teacher	29 204	Certificate holders	62.1	Undergraduates in Gen. Ed.	20.1	-		2	82.2
Manual training teacher	7 497	Certificate holders	70.0	Undergraduates in Gen. Ed.	12.8	-		2	82.8
Draughtsmen civil	1 229	Diploma in Engg./Tech.	51.8	Certificate holders	20.8	Undergraduates in Gen. Ed.	16.4	3	89.0
Draughtsmen architectural	274	Certificate holders	52.2	Diploma in Engg./Tech.	29.2	-		2	81.4
Draughtsmen mechanical	4 385	Diploma in Engg./Tech.	48.0	Certificate holders	33.3	-		2	81.3
Draughtsmen structural	102	Certificate holders	66.7	Diploma in Engg./Tech.	24.5	-		2	91.2
Draughtsmen electrical	202	Diploma in Engg./Tech.	56.9	Certificate holders	25.7	-		2	82.6
Director/manager wholesale trade	7 676	Undergraduates in Gen. Ed.	25.0	Graduates in Arts	22.3	Degree in Engg./Tech.	22.1	③	69.4
Director/manager retail trade	5 784	Undergraduates in Gen. Ed/	47.9	Below matric	32.6	-		2	80.5
Director/manager bank	15 995	Graduates in Arts	38.6	Undergraduates in Gen. Ed.	34.2				
Director/manager mines, quarry	3 774	Certificate holders	23.2	Below matric	16.2	Undergraduates in Gen. Ed.	12.4	③	52.8
Director/manager manufacturing	34 027	Undergraduates in Gen. Ed.	30.4	Below matric	23.0	Graduates in Arts	21.8	3	75.2
Director/manager transport	1 999	Undergraduates in Gen. Ed.	52.0	Graduates in Arts	23.4	-		2	75.4
Director/manager other services	6 124	Undergraduates in Gen. Ed.	23.9	Below matric	21.7	Graduates in Arts	16.3	③	62.1

(1) Equal number possessed below matric qualifications.

(2) Equal number possessed certificate.

(3) Post-graduates in science formed 9.3 per cent of the total in this category.

(4) Undergraduates in Gen. Ed. subjects and post-graduates in various subjects formed about 10 per cent each of the total.

Source: Occupational educational pattern in India (private sector) - 1971 - Directorate general of employment and training, Ministry of labour, New Delhi, 1976.

Table IV.10. Percentage flow of graduates in paid employment classified according to important occupational categories

Occupation	Doctorate	Honours	Post-Graduates								Graduates							
			Arts	Science	Commerce	Engineering	Medicine	Agriculture	Education	Others	Arts	Science	Commerce	Engineering	Medicine	Agriculture	Education	Others
Teachers	60.6	44.8	68.1	67.6	27.2	40.2	37.2	20.4	88.6	26.2	51.3	48.0	9.0	5.8	11.5	13.2	92.0	11.8
Statisticians, economists, accountants and auditors			2.9		15.0								10.4					
Social scientists, jurists			2.4															10.7
Scientific and technical personnel				9.4				20.4				3.3		3.5		8.0		
Engineering, technological and physical scientists						36.5						5.4		67.6				
Physicians and surgeons							49.0								77.4			14.8
Life scientists								26.8								29.3		
Farm managers and supervision																10.7		
Bookkeepers, cashiers, etc.		13.2	3.5		20.7						6.5	10.5	26.6					
Clerical and other supervision		7.4	6.0								7.1	4.6	11.5			6.8		15.2
Other clerical and related workers			6.0		10.4						14.4	6.2	21.9					12.0
Others	39.4	34.6	11.1	23.0	26.7	23.3	13.8	32.4	11.4	73.8	20.7	22.0	19.5	23.1	11.1	32.0	8.0	35.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100,0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Report on the employemt pattern of graduates, Directorate General of Employment and Training, Ministry of Labour, New Delhi, 1976.

A meaningful matching between occupations and educational titles should, therefore, be analysed separately for firms of different sizes, product mix and levels of technology.

(b) Requirements not well defined

Besides the above facts, very often the firms do not take the trouble of making a scientific study of the actual requirements of jobs in terms of educational/training preparations and recruit persons as they are available.

(c) Variations in recruitment and career planning practices

All the establishments do not follow the same and uniform recruitment procedures and career planning practices. Some establishments prefer to take less qualified persons and train them on the job, while others may take higher qualified persons in view of the future rôles to be assigned to them and avoid the cost of training or further education all at once. Similarly industrial houses and other employing organisations have different paths for the career development of their employees. In some cases the employee may not change his basic specialization but in others he may have greater flexibility for doing so. Many of such variations can be explained if the occupation-education matrices are constructed for different age cohorts of the stock of employees. Such age specific cohort analysis will also be useful in separating the supply effect and also the new innovations in technology which might have been introduced over the time.

(d) Supply effect

The education employment correlation is dependent not only on the demand from industrial establishments and other employing agencies for skilled staff capable of assuming certain tasks, but also on the supply of qualification on the part of individuals turned out by the educational system i.e. the output of this system. The supply effect can take place in two ways viz , numerically and qualitatively. In the first case when the output expands and the supply increases, firms tend to raise their requirements. As an instance of this the recruitment of engineering graduates for jobs meant for diploma holders after 1967 in India is quite refreshing. A survey on the employment of graduates in political science conducted by a research group in late 1960s at the Max Plank Institute for Educational Research in West Germany is generally cited as the strategically most valuable study for the absorption approach or the supply effect of the second type (qualitative). The concept of "manpower requirement", is, therefore, a highly elastic one and it is for this reason that in a country like the U.S.A. research on the relationship between higher education and occupation generally takes for granted that such flexibility exists.

(e) Present vs. future considerations

The employer is sometimes more anxious to acquire potential for the future than an immediately utilisable acquired knowledge or skill. This has become a trend in most of the firms in view of the rapidly changing technology.

Taking note of the above facts it may be summarised that in spite of the flexible nature of the occupation-education relationship, it is more clearly defined in the case of professional and skilled occupations than in the case of executive, managerial and administrative occupations. Similarly, the relationship is more clearly defined in the case of jobs in the industry than for those in the tertiary sector.

CHAPTER V

CONCLUSION

The practitioners of the manpower approach know very well that the manpower requirement approach works best in the context of scarcity of highly trained manpower. For example the achievements in the field of manpower planning were cited with reference to engineering manpower till 1967-68. Engineering education has been planned both at the college and polytechnic levels right from the year 1950-51. The plan of development of engineering education was taken up just at the very appropriate time when industrialisation was under way and there was keen demand for engineers throughout the country. At that time individual aspirations towards professional status and economic needs coincided nicely. The plan was, therefore, welcome by the students and their parents who found an access to an education which assured them of a satisfactory career. The employers also eagerly participated in it lest they may face shortage. But what happens when the reconstruction phase is over and investment priorities favour rural development? Such a situation hints of possible difficulties with the employment of graduates or their under-utilisation. This has been precisely the case even with engineering graduates and diploma holders whose education was number controlled. This education suffered a serious set back after 1967-68 when the engineers could not be fully absorbed by the economy. The situation could have been averted had the pause for two years in engineering education expansion could be implemented as recommended by the Institute of Applied Manpower Research studies on the subject as early as in 1964.

Whether there is manpower planning or no manpower planning a sound educational system must keep itself informed of what happens to its products when they enter the world of work. To what extent the curriculum has been successful in meeting a variety of measures of labour market successes. How effectively does the labour market operate to allocate graduates into various occupations? To what extent the expectations of the students have been achieved both in getting the job and in performing the various activities on the job?

In this context the performance of the industrial and service sectors requires to be carefully watched over the time. The need for third level manpower depends essentially on the nations industrial structure and more particularly on the service activities in research, education and government administration. Some need for higher educated manpower has also started to arise due to brain drain. However, it should be borne in mind that in India in all probability an overwhelming part of the total manpower needed will be of primary and secondary level and not of the third level. Agriculture and allied activities will continue to absorb the largest number of the labour force and in this sector the rôle of the higher educated persons will be marginal for it is found that even in the developed countries agriculture has only about one per cent of its working force with third level education. Even in the trade and transport sectors of the developed countries the share of the third level educated working force is only about 5 per cent or so. Thus the growth of service and modern industry will be vital for the absorption of third level educated manpower.

The study shows that the relationship between education and employment has neither been fixed (except very few educational preparations) nor flexible. Persons with some education have qualified for several types of jobs and conversely several types of education have provided access to one and the same job.

Substantial part of the national higher education should be based on its development plan but this can become effective only when the development perspective is available for a longer period than 10 years. Such a long term plan should also be available for 20 to 25 years, because it is only this type of a long term plan that will give some idea of where the world at large is going. If the developing countries continue to plan on the basis of past growth rates, they would lead to disaster, an acceleration of growth is simply a must (1)

Not much can be done in the field of higher education on the basis of a five year perspective of the national economy as the enrolments in higher educational institution have already taken place when such a plan is available. In a sense not much can be done even over a 10 year period as the pressure and its direction on college and university admissions over the next 10-11 years is already built in the educational system. Actually most of the out-turn from the higher educational system during the next five years is already decided. Therefore, any change can be meaningful only after five or six years. It is due to this time lag factor that there are as many persons on the live register of the employment exchanges as is the out-turn of the educational system. The national system of higher education can joyfully have holidays for a complete one or two years without substantially affecting the labour market supply position of higher educated manpower.

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(1) Jan Tinbergen. Guidelines to the Third Level Education in Developing countries in order to assist in the creation of the New International Economic Order - Working draft, for the Seminar on Higher education and employment - 4-7 December 1978, IIEP, Paris.

The planning agency can achieve a better fit of supply and demand than can the market specially when the objectives are to narrow down the social and regional disparities in educational opportunities. It is likely that the planning authorities may not be quick enough to recognise the disequilibria appearing in the labour market and the choices of students for different types of education but as the planning authorities have long term approach, they will be in a better position to make necessary changes to reach general equilibrium.

A special feature of the national higher education system in India is that it is heavily subsidised and in spite of surplus manpower the state is committed to liberal scholarship policy for the weaker sections of the society including women and students from the rural areas. This poses a serious difficulty in achieving a match between the supply of and demand for manpower. The employment market finds itself conditioned by the immediate resource scarcity. When higher education goes on expanding primarily for social and political reasons rather than on economic manpower considerations there is bound to develop a surplus of manpower. Similarly, government policy on correspondence and part time course education results in higher output from education system.

The situation has further deteriorated due to the demographic pressures. The labour force has been increasing so rapidly relative to capital investments and infrastructures that absorption rates for all types of labour has either become stable or declined. The population pressure is felt in higher education also as the social demand for the post secondary education exceeds any economically justified level.

Further minimum wage laws, restrictive labour use, regulations, recognition of union activity, increased supervision of work rules by the government, etc. unintentionally result in less demand for labour and its substitution by capital.

Manpower estimates have been worked out for a number of categories on the basis of global projections method making some corrections in projecting past trends into the future. How disquieting this method may be can be seen with reference to the Great Depression (1929-36) when the gross national product -

occupation and employment trends prevailing at that time were not used as the basis for projecting a twenty year programme of educational requirements for Europe and North America. On the contrary they produced a Keynes and his continuing impact on human resource development. The past of the developing countries is a vast depression phase which continues in the present. Any methodology for projecting their future which situates its base line in the past or present must, therefore, be questioned and only used with caution. There should be a special developmental strategy to quickly lift up the developing economics ensuring further utilisation of their human resources. (1)

Case studies of rates of return for various forms and levels of education made in the USA, UK, Sweden and India, Ghana and Mexico etc. show that private rate of returns for graduate education are higher than their alternative private rates of returns. Therefore the demand for higher education keeps on expanding. Literature on the subject also shows that college graduates enjoy an economic advantage over less qualified people in the labour market. Irrespective of length of labour market exposure, the college graduates enjoy an advantage over the other educational categories according to any of the criteria. Specifically they have had a lower incidence of unemployment , are more likely to be employed in high status occupations and have substantially higher anual and average earnings. They also occupy higher social status in the society.

It must also be pointed out that education is not merely a production good like a machine, but also a consumption good like radio or wrist watch and that some educational unemployment is both inevitable and needed for development. Frustrated and unemployed educated youth may compell the government to adopt policies to create conditions for their utilisation specially through better implementation of the developmental plans which have hitherto never achieved the targeted growth. This phenomenon may be compared with the fictional unemployment which is the price for technological progress in the industrialised countries.

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(1) Malcolm Adiseshiah, It is Time to Begin, Unesco 1972.

How costly has been the educated unemployment? Adiseshiah states that annual cost of educated unemployment in India comes to about Rs. 700 million which is 50 per cent of the anual central educational budget on all types of education and 0.33 per cent of India's G.N.P. (1) The real cost is the income and output that is foregone without any hope of retrieval. It is, therefore, very important that this human resource is not wasted any more.

The basic causes of educated unemployment lie outside the purview of the educational system as they lie outside that of the employment system. They are the result of economic policy which seems to turn a blind eye to demographic trends. Educational system might have only contributed to the form of educational unemployment. For example, it might have acted as an instrument of converting rural invisible under-employment and unemployment into overt urban unemployment. Disequilibrium between educational levels, streams and specialisations and relative employment prospects for them may further be another contributory factor.

An employment oriented educational policy should begin with an employment oriented economic policy which should consist of:-

(a) A serious population policy is that the new entrants to labour force have to be controlled through a firm policy of population control and family planning. These measures will not have immediate results but will bear fruits in the eighties and nineties. If the country is serious about employment and development, it has to be first serious about its population growth.

(b) Increased industrial activity generating employment through the use of idle capacity of firms, labour intensive production for the domestic market, import substitution and production for other members of the Third World.

(c) An educational system that ensures that the process of skill acquisition is as near to the needs of prospective employers and as inexpensive as possible. This can be achieved by a through study of job contents and making appropriate changes in the curricula.

(d) An employment policy that determines and creates occupational patterns in terms of available and likely available supply of educated persons. This calls upon the economic planners to mobilise all resources to work for the fuller utilisation of the available manpower.

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(1) Malcolm Adiseshiah, op.cit. 1972.

In short there is a need to have a plan which should consist of three parts - (a) family planning and population control, (b) economic development ensuring greater use of modern technology and science and increasing the productivity of labour and (c) educational reconstruction.

The enrolments in higher education are by no means excessive when compared to the standards reached by advanced countries and also some developing countries. They are not even the minimum essential if India decides to become an industrialised modern society. Similarly the fact that the number of job-seekers is increasing cannot be attributed to the lack of relevance between the training received and the requirements of an occupation. Barring a few cases, Indian higher education system is producing a variety of general and professional qualified manpower which is capable of discharging any occupational obligation quite satisfactorily. Not only this the system has been meeting the requirements of experts for both the developed and the developing countries in an ever increasing number. Therefore, the cry that the Indian education is not cultivating the requisite professional skills is merely a bogey and not based on sufficient facts. This is also borne out by the fact that no shortages are reported both by the public and private sector industrial houses and organisations for want of adequately qualified higher educated manpower and also the fact that there exists no internal training system in Indian industry at that level, proves that higher education is meeting the task assigned to it. It is only the changes in technology where some mismatch shows up.

The fundamental fact of the Indian life is the appalling poverty of the people and the most important task before the country is to raise the standard of living of its people to a point where at least nobody is below the poverty line and every one has two square meals and adequate clothing and dwelling. If this task is taken in its full seriousness and with sincerity it will call for the services of a very vast army of educated persons. It is really a dilemma that India has unemployment of educated persons when she has yet not been able to fight successfully with the basic problems of food, clothing and home. (Development strategy has to be oriented towards meeting these basic needs which will generate both employment and income, which in turn will require educated manpower). India has to make a multi-pronged attack on all these problems with the help of her human resources on the one hand and natural resources on the other. It is only the meaningful and effective meeting of the two which is lacking so far. Once they are put into a union, India will be out of the woods.

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